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ABSTRACT

This teacher's guide, consisting of learning modules, lists of resources, and assessment recommendations, is designed as a tool for developing a computer literacy component of an existing prevocational course or in teaching a free-standing computer literacy course. A list of aims and objectives for a computer literacy course is provided first. Included in the next section of the guide are 57 learning modules that address the following areas: computer basics; computer programming; business, office, industrial, social, and other applications of computers; site visits; and assessment. The remaining four chapters cover resources, classroom management strategies, use of the materials for staff training, and project maintenance. Each of the learning modules includes a list of objectives; initial, midcourse, and final assessment recommendations; student assessment materials; worksheets; project outlines; and lists of recommended films, videos, and software. Appended to the guide are nine computer programs, a glossary of computer literacy terms, and a series of useful addresses. (MN)

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FURTHER EDUCATION UNIT

A Staff Development Publication

ED239082

Computer literacy

Part II – A teacher's guide

Jo Lloyd, James Taylor and **Chris West**
Gloucestershire College of Arts and Technology

With contributions from
Cambridge College of Further Education and
Southgate Technical College

CE 037934

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Dear Sir/Madam

COMPUTER LITERACY: PART II - A TEACHER'S GUIDE

I enclose herewith one of the two volumes associated with a project on Computer Literacy, carried out on our behalf by the Gloucestershire College of Arts and Technology (GlosCAT).

This volume is designed to assist all FE teachers to become teachers of computer literacy. The GlosCAT project showed that, provided adequate support was given, this was both a desirable and practical aim. The document is an attempt to provide some of that support. It contains not only a curricular framework; but also detailed content for a large number of modules; guidance on hardware, software, assessment and class management; and suggestions for staff training.

All this inevitably results in a large, and expensive, volume. We are anxious to make this available to colleges and LEAs but have had to restrict circulation. Subsequent editions of this volume, should it prove valuable, will probably be edited into separate smaller parts. The aim of initially distributing this part as a single document was to stress that Computer Literacy is a subject which crosses departmental boundaries.

The binding of this volume facilitates easy copying of individual pages, and in drawing your attention to our copyright clause, we would hope that colleges will use their own reprographic resources in order to spread the cost of distribution.

The considerable extent to which the FEU has been able to agree with the advice given in this report, is described in the Preface. The information given can be regarded as complementary to MSC material supporting its work-based YTS schemes. We hope however, that the FE sector will acknowledge its wider potential by including Computer Literacy in all its curricula, making it available to adults and young people alike.

Yours faithfully

Jack Mansell

JACK MANSELL
Chief Officer

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PREFACE

i. This is an important document in an obviously important field. The ability, or lack of it, in using a microcomputer will, for the next two decades at least, identify our age group and/or our talent for keeping up to date. This applies corporately as well as to individuals, and the credibility of the further education sector will in no small way depend on the speed with which colleges and their staff come to terms with IT, of which Computer Literacy is a major part.

ii. This report comprises two volumes aimed at assisting the FE system to understand the concept of Computer Literacy and to make it an essential part of the FE curricular provision. In a previous report on skills*, the FEU has suggested that all FE teachers should be teachers of basic skills. Both the MSC and the FEU have defined Computer Literacy as a basic skill; the implication for all teachers, their managers and advisers, is therefore clear.

iii. Part I of the report is aimed at the providers of Computer Literacy courses and Part II is aimed at the teachers. Both volumes define Computer Literacy in terms that we should all understand; Part II additionally defines it in terms of educational aims and objectives, and provides in a modular form support material backing up that definition.

iv. As with Basic Skills, the FEU realises that we are in a situation where much of the terminology of education and training is, rightly, being radically re-defined. If better and wider education/training opportunities are to be provided for more people, then we need to critically appraise the extent to which our existing terminology restricts opportunity. With a new area of knowledge and expertise such as that presented by IT and Computer Literacy, we have to be careful not to perpetuate constraints and inequality of learning opportunities by adopting restrictive definitions and inappropriate stereotypes of ability.

v. The definitions of Computer Literacy used in this report therefore are supported by the FEU because they do not imply restriction of access. Indeed the material in Part II has been trial-tested with students representing a wide range of (conventional) ability and age. In adopting these definitions we are confident that we are associating ourselves with a type of curricular provision that should be made available to everyone. Quite obviously, as with all skills, some learners will prove more adept than others; but the connotation of computer literacy as an educational opportunity that should be available to all, is one which we firmly support. The experience of the colleges who helped to test the material generally confirms that Computer Literacy can be regarded as an everyday skill available to everyone. Like all skills, it decays if it is not taught and learned thoroughly, and if it is not practised and updated from time to time. The introduction of Computer Literacy into schools therefore, does not absolve the FE system from responsibility for the further development of this skill for young people and adults.

vi. There is a high degree of compatibility between the definition of Computer Literacy that is supported in this report and that adopted by the MSC for its YTS programmes. Those discrepancies that do exist are relatively minor and relate largely to the nature of programming required. Part II in particular therefore should be useful to teachers and tutors associated with any scheme of vocational preparation, whether work or college-based. The design-base of Computer Literacy in this report rests upon a core of 28 modules, plus a selection of optional, more vocationally specific, modules. Teachers and tutors will wish to choose for themselves how they organise the learning of these modules and appropriate guidance is given in the report, but the FEU, in supporting the definition espoused in this report, hopes that all students/trainees will have the opportunity of experiencing at least the core modules. For most students this represents some 30 hours of work - not an excessive period if one considers the potential disadvantages of being computer illiterate.

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* Basic Skills FEU, November 1982

vii. Valuable information on resources and hardware is contained in both volumes of the report. The authors suggest that, for Computer Literacy courses, the BBC model B microcomputer may be the 'best buy', but suitable alternatives are given. It is appreciated that many colleges are not starting from scratch, neither are their needs necessarily solely related to Computer Literacy, so it is hoped that this advice will be accepted as useful guidance for those who wish to note it, rather than as a prescription from the FEU.

viii. Much the same applies to the resources required to support Computer Literacy programmes. There is no lack of experience to show that too many excellent educational schemes fail because they are not adequately resourced and supported. Too few machines could deter otherwise willing teachers from commitment to the task of providing computer literacy for all their students. Inadequate technicial support and software can similarly frustrate both teachers and learners who are willing to have a go. As indicated in paragraph ii above, the FEU believes that all teachers should be able to teach Computer Literacy. The quid pro quo is a reasonable level of support; and again we hope that the advice given in this report with respect to resources, staffing and training - based as it is on experience - will be accepted as positive guidance rather than an FEU prescription.

ix. An attempt is made in Part I to relate Computer Literacy to many of the existing curricula in this area. This section will inevitably date as the major Examining Boards generate more schemes. The problem for colleges however, is to ensure now that time is available to provide this essential skill for all students. This requires a college policy, commitment and probably a re-allocation of time between subjects. Local rather than national decisions are necessary. All this report can do is provide a framework for those decisions.

x. In both volumes, but particularly in Part II, guidance is given to teachers with respect to the content, teaching skills and attitudes that have proved to be useful in getting to grips with this subject which must be new to most of us. Part II contains a significant amount of teacher support material, including guidance with respect to assessment and software, which has implications for the training of teachers and support staff. The authors maintain that "the levels of computer expertise needed by staff can be provided in a relatively short time". This is good news; and it is no accident that we have designated both volumes as Staff Development publications.

xi. We can only reiterate that, by describing Computer Literacy as a basic skill, we mean that all have the right to acquire this type of literacy. The responsibility of all teachers to contribute to the acquisition of this skill, must be for many one more extension of their professionalism. The alternative is to define Computer Literacy as a restricted skill, taught only by 'expert' teachers, to a selected group of students. For a new subject, so universally applicable, this would be nothing short of an economic and educational disaster.

xii. Finally, the FEU Board of Management would wish to place on record its appreciation of the colleges that contributed to the report. In particular our thanks are due to the Gloucestershire College of Arts and Technology who so willingly supported Chris West and his team in what was obviously a demanding project. It is to be hoped that the reception of this report is an adequate testimonial to their effort.

JACK MANSELL

PART II

A TEACHER'S GUIDE TO COMPUTER LITERACY

CHAPTER 1

INTRODUCTION

Uses of This Guide

1.1 Part I of this report is written for providers of Computer Literacy whilst this second part is written for the classroom teacher or workshop trainer. Computer Literacy is now accepted as an integral component of vocational preparation schemes, the Technical and Educational Vocational Initiative, B/TEC programmes in Further Education, and many Adult Education programmes. This Computer Literacy Scheme is equally appropriate for persons ranging from low ability school leavers to well qualified adults with no previous computer experience.

1.2 This guide has been written to enable the classroom teacher to build and teach a Computer Literacy component of a wider course or to create a free standing Computer Literacy course. It includes teaching plans with resource and assessment recommendations. The scheme is produced in a modular form and is structured to allow maximum flexibility of choice and to minimise preparation work. These modules have been developed, piloted, evaluated and refined in a two year project involving a number of F.E.Colleges.

1.3 The scheme has been developed on the assumption and recommendation that classroom teachers of Computer Literacy will not be computer specialists but will be people with experience and skills in other subject areas. Teachers will need to relate computing to other skill or knowledge areas of their parent courses.

What is Computer Literacy?

1.4 In summary and layman's terms, Computer Literacy is defined as follows:

A computer literate student should:

(i) Understand what computer systems are

(ii) Use computer vocabulary

(iii) Operate a microcomputer in a work related situation

(iv) Appreciate what a program is and why it works

(v) Be aware of applications of computing in commerce, industry and other settings

(vi) Be aware of current trends in Information Technology and its social implications

1.4.1 We need to know something about how computers work and the vocabulary associated with them before we can understand what they do or use them. Gone are the days when terms such as hardware, software, floppy disc, RAM were the province of computer professionals who mystified the rest of us.

1.4.2 Amongst our piloting colleges, a variety of micro, mini and mainframe equipment has been successfully used. The BBC microcomputer has been identified as a possible best buy for Computer Literacy courses, in view of its cost effectiveness, robustness, versatility and software and hardware support. It is worth noting that not only can the BBC microcomputer be used effectively as a relatively low cost resource for creating a computer environment for training purposes but that there are many examples of its successful use in a variety of working environments ranging from monitoring heartbeats in a London Hospital to word processing in small businesses. RML 380Z, LINK 480Z and Sinclair Spectrum are also suitable machines for Computer Literacy. It should be stressed that the operation of a micrcomputer in vocational preparation schemes should be closely tied to working situations.

Motivation of trainees in this respect is vastly increased when the operation skills are learned using software which is closely related to their career interests.

1.4.3 It should be stressed that the inclusion of an appreciation of programming means a minimal experience and that the implementation of this can be achieved in a variety of ways. It does not necessarily mean the writing of programs in BASIC. The rationale for including programming is that to fully understand and to confidently use pre-written software packages demands an appreciation of how that package has been produced and its potential vulnerability. A demystifying of what would otherwise be a black box has proved successful and has gained almost unanimous support in our field testing and evaluation. At the same time the recent availability of the languages PROLOG and LOGO on micro-computers means that programming can be introduced in rather more painless and interesting ways as an alternative to BASIC. (PROLOG and LOGO are languages which are based on mathematical logic and are nearer to everyday 'human' expressions of problems whereas BASIC, although the universal language of micros, is more influenced in its structure by the hardware). The most important factor to consider is that given a minimal introduction to programming a student feels more in control when operating a package.

1.4.4 A wide awareness of computing applications in commerce, industry and other settings is an aim which could get lost in specific training courses geared to a particular career path. This project seeks to give a wide awareness to all trainees. Again an awareness of current trends in Information Technology and its social implications (particularly effects on jobs) needs to be included in any Computer Literacy Programme. It is in these latter two aims that training and education cannot be divorced if students/trainees are not to lose sight of the context in which they are working.

Introduction to Classroom Modules

1.5 This guide gives the classroom teacher 57 Computer Literacy modules of which 28 are core modules which all students should experience. The core has been devised to cover all the Computer Literacy aims, on a broad base ranging from word processing to microelectronic control through the general spectrum of computer applications. It also includes social implications and trends in Information Technology. Completion of this course should ensure that the student has a firm foundation of Computer Literacy, in both educational and training terms, from which to proceed to work or further more specialised courses. Teachers who use the guide may be encouraged by evidence from pilot schemes that students are successfully pursuing both careers with some Computing skill content, and Computing courses in F E, after completing the modules.

CHAPTER 2

HOW TO USE THIS GUIDE

General

2.1 It is recognised that staff using this guide will be drawn from a variety of different backgrounds and will have a greater or lesser familiarity with both the nature of computer technology and with the teaching strategies which are most appropriate to prevocational courses. Staff already experienced in this type of work may wish to use the guide simply as a bank of materials and recommendations, to be drawn on as required. It is anticipated, however, that many of those becoming involved in the provision of computer literacy courses will be new to this area of work, and to assist these staff a suggested program for using the guide is provided below.

2.2 Using the teaching materials and the supporting chapters

STEP 1 Familiarise yourself with the definition of computer literacy given in Chapter 3, i.e. the student aims and objectives. Note that some objectives are defined as 'core', and are seen as integral to the achievement of full computer literacy, while others are 'subsidiary' only, and will relate to longer or more occupationally-specific courses.

STEP 2 Read the introduction to Chapter 4, and select appropriate modules for your course from the list given there. The titles are generally self-explanatory, but the detailed modular breakdowns later on in Chapter 4 may be referred to if more detailed information is required. Note that core modules are marked with an asterisk and should be included in all computer literacy schemes.

STEP 3 Find detailed modular breakdown sheets in Chapter 4 for each module to be used on the course. Using the references given, select appropriate materials to use with each module, e.g. worksheets, projects, programs, videos, and make a note of the resources needed. Check any unfamiliar key vocabulary with the Glossary (Appendix B). Use the references to assessment in the module breakdowns and the material in section 2 to plan the assessment strategy for the course.

STEP 4 Read the detailed resource recommendations given in Chapter 5, and ascertain what resources are available for your own course. Check these against resources which will be required for the modules you wish to run. Where particular programs, videos, hardware etc. which are recommended in the guide are not available to you, it will be necessary to find an alternative or susbstitute another activity. Organisations providing equipment and materials are listed in Appendix C.

(Program listings are given in Appendix A. If you require to use any of these programs, ensure that you have a stored version available on tape or disc. If not, it will be necessary to type the program in at a computer and test and store it well before the lesson in which it is to be used. It is hoped that later on a limited software copying service can be provided to support this report, but this facility is not currently available).

STEP 5 Read Chapter 6, which gives examples of class management strategies which can be used when teaching computer literacy and which provides some guidance in planning lessons.

2.3 Staff & Curriculum Development

Although developed primarily for use with prevocational courses, the computer literacy modules in this guide have proved effective in other contexts, ranging from general studies work in schools to use as part of adult education. Chapter 7 outlines how the materials can be used to form part of a staff training package for those teachers who will be involved in computer literacy courses, and is based on experience of developing and running such courses; it will be of specific interest to those involved in staff development in the computer literacy area.

Chapter 8 looks briefly at the future of the project which produced this report and charts developments of possible use to the intending computer literacy teacher.

CHAPTER 3

A COMMON CORE OF COMPUTER LITERACY

- Aims and Objectives

Aims and Objectives

Aim 1 To acquaint the student with the nature of computer systems and the associated terminology

Objectives The student will be able to:

(Core)

(i) use a simple predefined computer vocabulary correctly, both verbally and in writing;

(ii) list the basic elements of a computer system and state their functional relationship to one another;

(iii) recognise and distinguish between mainframe computers, minicomputers and microcomputers (in terms of relative size and characteristic uses);

(iv) recognise and state the function and importance of a microprocessor;

(subsidiary)

(v) trace the historical development of computing;

(vi) explain the functions of the units within a computer and how a communications link operates;

(vii) recognise and distinguish between the different ways of holding data on a computer;

(viii) distinguish, by example, between digital and analogue devices.

Aim 2 To familiarise the student with a range of computer equipment and enable him to use specified items with confidence

Objectives The student will be able to:

(Core)
(i) correctly identify and state the function of the central processing unit and the major computer peripherals;
(ii) use a computer keyboard to perform a simple task;
(iii) operate a specified microcomputer or visual display unit and use named facilities;
(iv) load a pre-written program from backing storage and use it to perform a set task;

(subsidiary)
(v) connect and successfully operate analogue and digital devices interfaced to a microcomputer;
(vi) use a graphics terminal to perform a specified task.

Aim 3 To develop a practical appreciation of the nature of computer programs and their method of operation

Objectives The student will be able to:

(Core)

(i) correctly identify the function of and need for software;

(ii) illustrate a logical sequence of instructions by drawing a flowchart or by another appropriate method;

(iii) read and amend a program;

(iv) from a specification provided, write, input, run and save a simple program involving input, processing and output;

(Subsidiary)

(v) list three programming languages and describe the types of applications for which they are most suitable;

(vi) develop and test a specified project program.

Aim 4 To acquaint the student with a range of uses to which computer technology is put in industry, commerce and other settings

Objectives The student will be able to:

(Core)

(i) describe a specified number of industrial applications of computer technology;

(ii) describe a specified number of commercial applications of computer technology;

(iii) describe a specified number of applications of computer technology in areas such as education, the media, public service or the home;

(iv) use a device incorporating micro-electronic control to perform a set task;

(v) use specified computer facilities in either a commercial setting or in a model business situation,

(vi) use computer facilities relevant to an application outside commerce and industry;

(vii) use a commercial teletext or viewdata system;

(Subsidiary)

(viii) use a computer package as a tool to facilitate decision-making.

Aim 5 To familiarise the student with current trends in information technology and with the social implications of its widespread use

Objectives (Core) The student will be able to:

(i) identify and describe a specified number of the main areas of information technology in use or under development, e.g. database systems, graphics and simulation, networking, artificial intelligence, industrial robotics, etc.;

(ii) describe a specified number of the social implications of information technology for work, leisure and the home;

(iii) realistically assess his/her potential for obtaining employment with the skills developed in the computer literacy course.

Aim 6 To increase the student's ability to benefit from education and training based upon or allied to CAL (Computer Assisted Learning).

This aim will be achieved through many of the objectives stated under all the aims described previously.

CHAPTER 4

TEACHING MODULES AND SUPPORTING MATERIALS

General

4.1 This chapter contains a variety of materials which have been developed to assist those involved in running computer literacy courses. It cannot claim to represent the last word on the subject; this is an area of work which needs continual development and review in order to keep pace with the changing nature of the technology and its impact on everyday life. It is hoped, however, that the ideas and materials presented here are structured to allow a flexible approach to their use, taking account of the many different environments to which they may need to be adapted, the differing levels of resource which will be available to support them in different institutions, and the need for courses to keep abreast of further developments in the use of information technology. To help in this last consideration, the project team will be issuing update sheets to this report from time to time.

The modular structure

4.2 In order to implement the computer literacy aims and objectives, a series of teaching modules has been developed. There are fifty-seven of these. Each is intended to cover a one-hour teaching session; however, they can be extended if desired by greater use than specified of student worksheets, project activity etc.

4.2.1 Twenty-eight of the modules have been designated as 'core' modules. These form the basic minimum required to fulfil the computer literacy aims and objectives, and should be included in their entirety in any course of which computer literacy forms a part. However, experience in running prevocational courses has shown the need for a flexible scheme of additional modules which will enable the student to progress further in computing knowledge and skills in particular applications areas. Accordingly, the twenty-nine non-core modules develop computer literacy further down the road of more specialised applications and computing knowledge.

4.2.2 It is intended that the modules should serve as a basis for putting together computer literacy schemes for prevocational courses. All students should take the core modules and, in addition, other modules may be selected to extend the course as appropriate to occupational needs. This technique is appropriate to the Youth Training Scheme, where the computer literacy core may form part of YTS core studies and additional modules may be chosen to meet the needs of specific Occupational Training Families.

Content

4.3 The teaching materials are classified into ten sections. These are as follows:

Section A	INTRODUCTION
B	COMPUTER BASICS
C	UNDERSTANDING PROGRAMMING
D	BUSINESS APPLICATIONS
E	OFFICE APPLICATIONS
F	INDUSTRIAL APPLICATIONS
G	OTHER APPLICATIONS
H	SOCIAL IMPLICATIONS
I	VISITS
Z	ASSESSMENT

Each section broadly covers a topic area. However, there are many areas of overlap; these have been dealt with, as far as possible, by cross-referencing between the sections, which can be viewed as banks of resource material for teaching particular areas of computer literacy.

The following is an outline of the types of material to be found within each section.

a) Detailed module breakdowns

These outline the course aims and objectives to be met or partially met during each session, and break down the modules into Memory, Understanding and Doing objectives and describe strategies by which these may be achieved. Also included are key computer vocabulary to be introduced/used during the module, resources needed, and any relevant assessment to be carried out. These are three core assessment modules (pages359-361) which should be followed by all courses. These modules constitute initial, mid-course and final assessment recommendations and have been developed with the intention that they can be integrated into the assessment requirements of parent courses. The assessment section also contains a bank of assessment materials.

b) Worksheets

'Worksheets' is used here as a general term to cover a variety of teaching materials developed by staff involved with the project. Most worksheets are in a form suitable for use with the student; however some are suggestions for activities rather than direct activity sheets, and others are in two parts, the first containing material for the teacher, and the second being the section for student use.

c) Projects

Each teaching module includes provision for time when students will be able to work on projects. It is hoped that this will allow scope for students of differing abilities to work at their own speeds rather than at the speed of the rest of the class. The use of project work also provides an opportunity to integrate areas of work covered in different modules. A variety of suggestions for projects are included in the teaching materials.

d) OHPs

Copies of these are included where they have been developed.

e) Films/Videos

Detailed breakdowns have been given for appropriate material of this kind. With some, there are also suggestions for linked student tasks. Where extensive use is made of videotaped material, it has been found necessary to set tasks in order to maintain the level of student concentration.

f) Software

An outline of each recommended program is provided, with details of where it can be obtained.

Classroom use

4.4 The modules are intended for use primarily with vocational preparation schemes, and the material is aimed at the students to be found on these courses. It has been found, however, that, because of the wide range of different groups of students involved, the spread of ability, and the diversity of backgrounds, it has sometimes been necessary either to cover topics in less depth than suggested or to insert additional material. For this reason, and also because of the range of different hardware and software which is likely to be used to support this type of course, the modular breakdowns should be used as a guide rather than as completely fixed course. Colleges need to be free to vary the sessions as appropriate to their students and to contribute ideas and materials of their own, since it is recognised that computer literacy can be presented in many different ways and that every college will have different resources and expertise available.

Content

Computer Literacy Modules

(Core modules are marked with an asterisk)

All modules can normally be taught in 1 hour

MODULE		SECTION	PAGE
*A1	What is computer literacy?	A INTRODUCTION	32
*A2	You and the computer		34
*B1	What is a computer?	B COMPUTER BASICS	44
*B2	Operating a computer		46
*B3	Meeting the microchip		48
*B4	Computer systems		50
B5	History of computing		52
B6	How does a computer work?		54
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B8	Analogue and digital devices		58
*C1	What is a program?	C UNDERSTANDING PROGRAMS	96
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*C3	Program control		100
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*D2	Using a business package		158
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D8	At the bank		170

MODULE		SECTION	PAGE
*E1	What is a word processor?	E OFFICE APPLICATIONS	220
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E4	Further word processing		224
*F1	Computers in industry	F INDUSTRIAL APPLICATIONS	256
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F5	Computer-aided design and manufacture		264
F6	Stock control in industry		266
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N.B. Assessment modules should be implemented at the beginning, middle and end of any course

Section A - INTRODUCTION

This section is intended to provide students with an introduction to Computer Literacy, what they will be learning on the course, and why.

Page

* Module A1, WHAT IS COMPUTER LITERACY, is a general introduction to the materials covered on the course and the teaching methods to be employed. It may be used as a self-contained 'taster' if required. 32

* Module A2, YOU AND THE COMPUTER, explains why the student should learn about Computer Literacy by explaining the increasing importance of computer technology at work and in the home. 34

Module specific resources are referred to under each module description and are grouped at the back of the section together with:

Project 1: Computers at work 38

which may be used at the teacher's discretion.

Key Vocabulary of core modules is explained in the GLOSSARY 505

* denotes core modules

MODULE A1 WHAT IS COMPUTER LITERACY?

COURSE AIMS AND OBJECTIVES

Aim 1 To acquaint the student with the nature of computer systems and the associated terminology
Aim 2 To familiarise the student with a range of computer equipment and allow him to use specified items with confidence
Aim 3 To develop a practical appreciation of the nature of computer programs and their method of operation
Aim 4 To acquaint the student with a range of uses to which computer technology is put in industry, commerce and other settings

(This is a 'taster' module; it touches on most of the course aims and objectives)

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
What computer literacy consists of	What the student should be able to do at the end of the course	Relating computer literacy aims to activities and to the parent course	Introduction of computer literacy, student aims and objectives, how it fits in with the parent course
			Providing a variety of short activities to give a representative sample of the course:
Specified computer equipment and associated vocabulary	How a specified computer is started up	Identifying particular equipment and recognising how to run it	i)Demonstration of starting up equipment to be used and explanation of its nature
Keyboard layout	How a programmed computer responds to commands	Using a computer to perform an interactive task	ii)Hands-on use of introductory program eg. MEET, CLASSFILE
New vocabulary associated with programming	The nature of a program	Entering and running a program at a keyboard	iii)Explaining what a program is; students to type in and run a 3-line program provided for them - worksheet 1
A computer application	How a computer can be used as a business tool	Suggesting information to be input and processed by the computer	iv)Demonstration of simple applications package, eg. CUSTSYS
Course aims and objectives	How the aims and objectives will be met	Relating the session's experiences to Computer Literacy in discussion	Class discussion to link these activities back to aims,objectives and the content of the course
			Period of practice/project

MODULE A1 WHAT IS COMPUTER LITERACY?

Key vocabulary	COMPUTER	
	COMPUTER LITERACY	
	MICROCOMPUTER	
	KEYBOARD	
	VDU	
	PROGRAM	
	PACKAGE	
Resources	Introductory program, e.g. MEET, CLASSFILE	(pages 40, 41)
	Worksheet 1 'A simple program'	(page 36)
	Program CUSTSYS (see Section D)	(page 211)
Assessment	None	

MODULE A2 YOU AND THE COMPUTER

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 4 Objectives: The student will be able to:
(i) describe a specified number of industrial applications of computer technology
(ii) describe a specified number of commercial applications of computer technology
Aim 5 Objectives: The student will be able to:
(iii) realistically assess his/her potential for obtaining employment with the skills obtained from this course

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
Examples of use of computers in selected jobs relevant to student aspirations	How the skills developed on this course can prove useful in a work environment	In discussion and exercise, relating the use of computers to job aspirations	Introduction of increasingly important role played by computers at work. Set task to relate this to student's aspirations - see worksheet 2
The use of computers in a variety of different workplaces. New vocabulary related to applications shown	The degree to which computer technology can be found in the workplace, and some typical applications	Selective extraction of information from a variety of sources to perform set task	Preparation of students a)Explanation of objectives b)Outline tasks to be set Use of slides and/or video film material (eg. extracts from BBC Computer Programme 'It's happening now') to illustrate uses of computers in a variety of work places, with linked set task for students.Group review of results of task
Other areas of life in which computer technology is found	The relevance of computing outside the work environment	Using previous knowledge and experience to contribute to class discussion	Q/A session drawing on experience of students to produce examples of computers in other settings such as the home
			Period of practice/project

MODULE A2 YOU AND THE COMPUTER

Key vocabulary	APPLICATION ON-LINE (Selected vocabulary relevant to applications shown)
Resources	Worksheet 2 (Page 37) Video playback facilities Videotape BBC Computer Programme 'It's happening now' (Page 39) Applications slides (Page 410)
Assessment	Performance on group task

A simple program

A program is the name given to a list of instructions telling a computer what to do.

This is a short program in a language called BASIC:

```
10  PRINT  "COMPUTER LITERACY COURSE"
20  PRINT  "FIRST LESSON"
30  PRINT  "PROGRAMMING EXERCISE"
```

Type these three lines into the computer. Be sure that you get all the punctuation right. After each line, press the key marked RETURN.

When you've finished doing this, type in

```
RUN
```

and then press the RETURN key again.

What happened?

Job search

What job would you like to do?

Try to be realistic, don't be afraid to have some ambition but choose a job which you think you could get at some time in the future - after some training perhaps.

Got it? Good, now go into your group and in the group write down all the jobs that have been selected.

1)______________________________

2)______________________________

3)______________________________

4)______________________________

5)______________________________

Now as a group take each job in turn and write down as many ways in which computers and computer technology can be used in doing that job or in jobs related to it. Also put down ways in which computers might affect that job in the future.

Project 1 Section A

Computers at work

PURPOSE:	To discover the use of computers in a particular work area
TIME ALLOWED:	4 hours
ABILITY NEEDED:	Knowledge of computer equipment Communications skills
OBJECTIVES:	The student will be able to explain the relevance of computer technology to a particular work area of his choice
RESOURCES:	Books, magazines etc. Outside visit
PRESENTATION TO STUDENTS:	1) Student to choose the work area, with guidance from the teacher, and to be provided with folder, notebook etc. ii) Student to research in books, magazines etc. iii) With teacher guidance, student to plan a visit to a particular place of work and formulate questions to be asked iv) Student to visit, viewing the computer equipment and asking a responsible person the list of prepared questions, and to obtain documentation from the computer system if possible v) Student to prepare the final project; may be a scrapbook, a diary, a presentation, or alternative.
ASSESSMENT:	The final project produced.

Video: Module A2

BBC Computer Program - 'It's happening now'

1. General theme

Background to the development of computers; current applications; how to load and run on the BBC micro; social consequences of computing.

2. Detailed breakdown

a) The historical background. Stonehenge as a calculator; the early computers and their inflexibility

b) A Kray 1 at the European Weather Centre, used as an example of a large-scale processing application

c) The continuing development of computers to the present day. A selection of peripherals for micros shown. Brief look at a variety of current applications of computers; reasons for the general usefulness of computer power.

d) Computers in small businesses; the use of a microcomputer system in a sweet shop

e) How to get hold of copies of programs: listings, magazines, cassettes, floppy discs

f) Using LOAD, LIST and RUN on the BBC Micro

g) Use of PRESTEL. An airline booking system

h) The social consequences of the widespread use of computers

Program Name **Module A1**

MEET

BASIC Version

BBC BASIC

Program Function

This is a simple program to introduce the user to the computer. It explains the functions of its parts in an interactive way, by asking questions of the user. It also demonstrates its speed by doing a simple sum.

Special Features

None

Available from:

GlosCAT - by means of the appended listing (Appendix A page 468)

Program Name

Module A1

CLASSFILE

BASIC Version

BBC BASIC

Program Function

This is a simple sort program. It allows the user to enter the names, dates of birth and addresses of the people in the class. Then, the surnames are sorted alphabetically and the records are printed on the screen. It will accept up to fifteen records

Special features

None

Available from:

GlosCAT, by means of the appended listing (Appendix A page 437)

Section B - COMPUTER BASICS

Page

This section is intended to provide the student with the underlying knowledge about computers and skills in their use which are needed to allow a full appreciation of the uses to which they can be put.

* Module B1, WHAT IS A COMPUTER, identifies the basic elements of a computer system, and how they work together to perform a task. This is done in terms of input, processing and output devices rather than by detailed references to the electronic components involved. 44

* Module B2, OPERATING A COMPUTER, introduces the student to the operation of a microcomputer by means of hands-on experience. 46

* Module B3, MEETING THE MICROCHIP, explains microchips; what they are, how they are made, what they can do, and typical places where they can be found. 48

* Module B4, COMPUTER SYSTEMS, looks at computer systems. Different sizes of computer are introduced, peripheral devices explained, and a case study made of at least one application. 50

Module B5, HISTORY OF COMPUTING, explains the development of computing machines from their beginnings until the present day, and attempts a look into the future. 52

Module B6, HOW DOES A COMPUTER WORK, considers some of the simple principles underlying computing; how the logic units work together, and the principles of data communications. 54

Module B7, COMPUTER STORAGE, looks at ways in which data is stored on computer, in terms of number bases, character codes, and types of file. 56

Module B8, ANALOGUE AND DIGITAL DEVICES, is an introduction to analogue and digital principles and how these are used in a variety of different devices. 58

Module specific resources are referred to under each module description and are grouped at the back of the section together with the following materials which may be used at the teachers discretion.

Projects:	2 It's your computer	79
	3 Types of computer - poster	82
	4 The Keyboard	83
	5 Computer manufacturers	85
Videos:	BBC Computer Programme - 'It's on computer'	88
	Making the most of the micro - 'The versatile machine'	91

Key vocabulary of core modules is explained in the GLOSSARY 505

* denotes core modules

MODULE B1 WHAT IS A COMPUTER?

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
(ii) list the basic elements of a computer system and state their functional relationship to one another
Aim 2 Objectives: The student will be able to:
(i) correctly identify and state the function of the CPU and the major computer peripherals

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review, revising previous material	Introductory review, by either Q/A, group work or computer check-test
The basic elements of a computer system. Relevant new vocabulary. Hardware and software	How the different elements of a computer inter-relate	Identifying elements of a system (eg. input, output, storage etc.) in the human body, or a washing machine	Question and answer session to define a computer - explaining basic elements of a computer system and drawing diagrams to illustrate. Use of analogy to show methods of working, eg. the human body, a washing machine
Running a program	How an operating computer system works	Identifying the elements of a system in a working computer	Demonstration of simple program to show a computer system working, eg. load in and run MEET. Relate to basic elements of system
Elements of a system	How the elements of a) a manual system, and b) a computer system, work together to perform a task	Completing gapped handout to develop and test knowledge	Students to complete worksheets 3 and/or 4 on the elements of a computer system
Relevant new vocabulary	How particular pieces of equipment form a system	Drawing plan. Labelling different parts (with guidance)	Students to draw labelled plan of equipment to be used during course
			Period of practice/project

MODULE B1 WHAT IS A COMPUTER?

Key vocabulary

INPUT
DATA
DATA PROCESSING
OUTPUT
MEMORY
BACKING STORAGE
HARDWARE
SOFTWARE
PROGRAM
CONTROL
MAGNETIC TAPE
VDU
KEYBOARD
PRINTER

Resources

Program MEET or another simple program (see section A1 page 468)
Worksheet 3 'Elements of a computer system' (page 61)
Worksheet 4 'A computer system' (page 63)

Assessment

Score on worksheet 4 (page 63)
Labelled plan of equipment

MODULE B2 OPERATING A COMPUTER

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing

Aim 2 Objectives: The student will be able to:
(ii) use a computer keyboard to perform a simple task
(iii) operate a specified microcomputer or VDU and use named facilities

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work, or computer check-test
Vocabulary related to microcomputer functions	The steps necessary to operate a specified microcomputer	Operating a specified microcomputer, ie. i)plugging in and starting up ii)loading named program from backing storage iii)running the program iv)deleting the program v)appropriate keyboard use vi)switching off	Preparation of students: a) explanation of student objectives b) outline tasks to be set Demonstration of required skills. Guided practice by students, using worksheet 5 and with individual assistance/instruction as necessary
The nature of profiling; its use in the parent course	How profiling can be used to show progress and achievement	Working with teacher to complete profile	Use of profiling form to gauge student progress and abilities
			Period of practice/project

MODULE B2 OPERATING A COMPUTER

Key vocabulary	LOAD CHAIN RUN NEW CURSOR
Resources	Worksheet 5 'Loading and running programs from tape' (page 64) Worksheet 6 'The keyboard' (page 65) A variety of programs to load and run - BBC program KEYBOARD is suitable (page 92)
Assessment	Computer operation profile (page 372)

MODULE B3 MEETING THE MICROCHIP

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
(iv) recognise and state the function and importance of a microprocessor
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A group work, or computer check-test
New vocabulary related to microchips	The nature and function of microchips and how they are made	Extracting information from visual sources using 'masking' techniques to show how microchips are built up	Introducing the different types of microchip and their process of manufacture, by i) Exposition and visual materials ii) Looking at a microchip under a microscope iii) Extracts from BBC Horizon programme 'Now the chips are down' or similar
Microchip applications	Why microchips have become widespread, and in what areas	Working in teams to draw on previous knowledge and relate it to a set task	Students to work in competitive teams to produce lists of microchip applications, from their own experience and from visual materials provided. Class discussion to decide reasons for widespread use - cost, capabilities, size, robustness etc.
			Period of practice/project

MODULE B3 MEETING THE MICROCHIP

Key vocabulary	MICROCHIP MICROPROCESSOR SILICON CHIP
Resources	Microscope Microprocessor Video play-back facilities Video BBC Horizon Programme 'Now the Chips are Down'
Assessment	None

MODULE 34 COMPUTER SYSTEMS

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
- (i) use a simple predefined computer vocabulary correctly, both verbally and in writing
- (ii) list the basic elements of a computer system and state their functional relationship to one another
- (iii) recognise and distinguish between mainframe computers, minicomputers and microcomputers (in terms of relative size and characteristic uses)

Aim 2 Objectives: The student will be able to:
- (i) correctly identify and state the function of the CPU and major computer peripherals

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
Names of the three main sizes of computer, ie. mainframe, mini and micro	How mainframes, minis and micros differ from each other Typical applications for each	Relating previous experience to new ideas and vocabulary. Completing exercise	Introducing different sizes of computer; illustrate by reference to previous modules, computers operated and applications encountered. Identify prices, capacities etc. Student to complete worksheet 7
Relevant new vocabulary Types of peripheral	How a variety of different hardware is used for computer input, output and storage	Identifying practical aids and relating them to computer input, storage or output. Extracting relevant material from visual sources	Use of a selection of visual materials and practical aids to introduce different types of computer peripheral, linking back to module B1 and the basic elements of a computer system
Materials from module B1	How a CPU and peripherals work together as a system to perform functions	Drawing a diagram of one or more computer systems	Looking at one or more case studies of an operating computer system to show a) the size of computer, b) the application(s), c) the CPU and peripherals used
			Period of practice/project

MODULE B4 COMPUTER SYSTEMS

Key vocabulary

MAINFRAME COMPUTER
MINICOMPUTER
MICROCOMPUTER
CPU
PERIPHERAL
TERMINAL

A selection of vocabulary relating to input, storage and output devices. This type of vocabulary will continue to be introduced in later modules relating to applications

Resources

A selection of visual materials relating to input, storage and output devices, eg

i) slides
ii) magazine illustrations
iii) media such as punched cards, bar-coded items, paper-tape, magnetic discus, printed output

Slide projector

Assessment

Worksheet 7 'Sizes of computer' (page 66)

MODULE B5 HISTORY OF COMPUTING

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
- (i) use a simple predefined computer vocabulary correctly, both verbally and in writing
- (iv) recognise and state the function and importance of a microprocessor
- (v) trace the historical development of computing

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
Early types of data processing equipment	How increasingly sophisticated mechanical methods were developed for processing data	Using data processing aids to perform set tasks	Outline the early developments in the history of computing machinery - abacuses, card sorting equipment etc. Students to be given a chance to try out as many methods as possible
New vocabulary related to sorting	The increased speed and accuracy of mechanical and electronic methods of sorting	Performing a timed sort	Explain sorting and Hollerith's census.Student exercise to sort punched cards into order. Demonstration of ALPHASORT or similar computer sorting program
New vocabulary related to electronic computer components	How computer technology has continued to develop throughout the twentieth century	Designing a functional computer	Introduce 20th century development, showing examples of mechanical parts, valves, transistors, and microprocessors. Students to work in groups to design the computer of the future. Plenary session to compare designs and decide on reasons.
			Period of practice/project

MODULE B5 HISTORY OF COMPUTING

Key vocabulary	SORT VALVE TRANSISTOR MICROPROCESSOR COMPUTER GENERATIONS
Resources	Alternative processing methods - Abacus, card sorter, sliderule, etc. Prepared punched cards Valves, transistors and microprocessors Program ALPHASORT (page 93)
Assessment	Performance on 'sort' exercise Design of computer of the future

MODULE B6 HOW DOES A COMPUTER WORK?

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:

- (i) use a simple predefined computer vocabulary correctly, both verbally and in writing
- (ii) list the basic elements of a computer system and state their functional relationship to one another
- (vi) explain the functions of the units within a computer and how a communications link operates

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
New vocabulary related to computer units	How the units of a computer combine to make a functioning whole	Completing gapped handout. Participating in group session	Introduce the different units of a computer and how they work together, using an analogy such as a railway yard. Student to complete worksheet 8. Group session to combine findings
Data communications vocabulary Applications of on-line systems	How computers are able to send messages to one another over long distances, and the implications of this.	Contributing to group discussion. Extracting information from visual material	Explain in simple terms the principles of data communications. Discuss the implications of the increasing use of communications lines on computers and their applications. This may be illustrated with material drawn from the BBC computer programme - 'The New Media'
			Period of practice/project

MODULE B6 HOW DOES A COMPUTER WORK?

Key vocabulary

MAIN STORE
ARITHMETIC UNIT
CONTROL UNIT
INPUT DEVICES
OUTPUT DEVICES
BAUD RATE
MODEM
ANALOGUE
DIGITAL

Resources

Worksheet 8 'Units of a computer' (based on ideas in the BBC COMPUTER BOOK) (Page 67)
Worksheet 9 'Computer structure - checktest 1' } if appropriate - these also draw on (Page 68)
Worksheet 10 'Computer structure - checktest 2' } materials covered in other modules (Page 69)
Video playback facilities
Video 'The BBC Computer Programme - The New Media' (Page 87)

Assessment

Completion of worksheet 8 (Page 67)
Completing worksheets 9 and 10 if appropriate (Page 68, 69)

MODULE B7 COMPUTER STORAGE

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:

(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
(ii) list the basic elements of a computer system and state their functional relationship to one another
(vii) recognise and distinguish between the different ways of holding data on a computer

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous module	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
The binary system	How two-state signals can be converted into binary codes and decimal numbers	Translating binary from visual aids to decimal numbers	Introduction to binary, using visual aids to illustrate, eg. switches, punched cards, full and empty jars etc. Students to complete worksheet 11
Character coding systems	How binary patterns can be translated into alphanumeric characters	Converting from binary to ASCII and typing the result in at the computer keyboard	Explaining how character coding systems such as ASCII provide some advantages over binary. Students to complete worksheet 12
New vocabulary relevant to file organisation and access	How information on backing storage is stored and accessed	Completing gapped handouts	Explain computer files and simple methods of organisation. Demonstrate with aids such as manual file, records, cassettes, discs, etc. and on the computer equipment available
			Period of practice/project

MODULE B7 COMPUTER STORAGE

Key vocabulary	DECIMAL BINARY ASCII SWITCH CODE FILE RECORD FIELD SERIAL ACCESS DIRECT ACCESS
Resources	Visual materials to illustrate principles of binary, eg. switches, jars, punched cards Clerical file and computer storage media Worksheet 11 'Binary to decimal' (Page 70) Worksheet 12 'Binary to ASCII conversion' (Page 71)
Assessment	Performance on worksheets 11 and 12

MODULE B8 ANALOGUE AND DIGITAL DEVICES

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
(viii) distinguish, by example, between digital and analogue devices

Aim 5 Objectives: The student will be able to:
(i) identify and describe at least two of the main areas of computing in which technological developments are currently taking place

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review, revising previous material	Introductory review, by either Q/A, group work, or computer check-test
New vocabulary	The distinction between analogue and digital methodologies	Using analogue and digital methods of calculating	Define analogue and digital. Demonstration to show distinction between analogue and digital methods of doing things, eg.counting v measuring units such as bricks. Review to assess relative merits of each method
Analogue and digital devices in common use	How analogue and digital devices differ from one another	Identifying the nature of different devices	Explain the distinction between digital (discrete) devices and analogue (continuous) devices. Student activity - working in groups to categorise a list of devices into digital/analogue. Review
Relevant vocabulary	How a digital device can control the operation of another digital device	Acting out the roles of being part of a digital control circuit	Students to undertake worksheet 13 to simulate control of a light switch - exercise involving role play by students
			Period of practice/project

MODULE B8 ANALOGUE AND DIGITAL DEVICES

Key vocabulary

- ANALOGUE
- DIGITAL
- INTERFACE
- COMMUNICATIONS BUS
- EPROM
- DISCRETE

Resources

Bricks, marbles, scales etc. for demonstration of counting and measuring

Worksheet 13 'Digital/computer control of a light switch' (Page 75)

Assessment

Performance on group activity given in worksheet 13

Worksheet 3 Module B1

ACTIVITY	Elements of a Computer System
PURPOSE	To reinforce description of computer system
TIME ALLOWED	20 - 30 mins
PREREQUISITE ABILITIES	(i) Numeracy - simple arithmetic calculations (ii) Legible writing (iii) Ability to follow verbal and written instructions
OBJECTIVES	Students will be able to (i) State the stages involved in computer operations and describe their relationship (ii) State the similarities between paper driven and computer based systems (iii) Give examples of forms of input and output.
RESOURCES	Worksheets (3) paper, pencils
PRESENTATION TO STUDENT	1) Students to work in pairs 2) One student play role of customer and other sales assistant at a builders merchant 3) Customer - selects colour and amount of paint required - fills in details on work sheet attached and passes to sales assistant. 4) Sales assistant checks quantities and inserts price 5) Cost is calculated 6) Order form is completed 7) Students identify the three stages INPUT - PROCESS - OUTPUT in this transaction.
ASSESSMENT	Each pair then completes worksheet (4)
EXTENSION	1) Groups can write computer program to perform the calculation 2) Complexity of the activity can be increased giving varying levels of ability - order forms from later exercises can be used plus a printed price list covering a range of goods.

Worksheet 3 Module B1

Elements of a Computer System

I
N
P
U
T

Customer. Fill in details below

PAINT. Colour ....
No. of Cans ....
Size of can (250ml 500ml 1 litre) ....

Salesperson. Check details opposite & select correct price per can

Price list 250ml £1.50
500ml £2.00
1 Ltr £3.00

P
R
O
C
E
S
S

Sales person

Calculate the cost of the order

No of cans	X	Price per can	=	Cost
....		....		....

O
U
T
P
U
T

Order Form - To be completed by Sales person and checked by Customer.

DIY Stores Ltd

ITEM	Quantity	Price	Cost
Paint Colour			
....	....	....	......

Payment by Cash/Cheque/Credit Card/Account

(Delete where not applicable)
Send to stores for despatch

Note the three stages you have gone through
INPUT - you put in the information necessary, some of this has come back from your MEMORY some from a price list. (BACKING STORE)
PROCESS - this is the calculation - but you have to know how to do it (need a program)
OUTPUT - an order form or at least the cost of the order.

A Computer System

An office computer is programmed to store the names and addresses of it's customers in alphabetical order and so produce up-to-date lists and print envelope labels.
The clerical assistant in the office types in names and addresses through the keyboard. The computer puts these into alphabetical order. The list can be displayed on the VDU and a copy produced through the printer. The up to date list of names and addresses can be stored on tape or disc.

In the system described above state:-

1) What forms the INPUT into this process?

....

2) What is the PROCESS that the computer performs?

....

3) What is the OUTPUT that is produced?

....

Also answer the following questions.

4) How does INPUT get into the computer in this example?

....

5) What controls the actions of the computer?

....

6) What is the internal MEMORY used for?

....

7) What items of BACKING STORAGE are mentioned?

....

8) State two pieces of equipment that produce the OUTPUT?

....

SCORE

Worksheet 5 Module B2

Loading & Running Programs from Tape

Name ....

Time allowed ½ hr - 1 hour

1) Make sure your microcomputer system is correctly set up and switched on.
The screen will display

```
BBC Computer 16K
BASIC
```

2) Check that the tape recorder is correctly connected - insert tape cassette - (WELCOME TAPE) - ensure it is rewound!

3) Set VOLUME at minimum and any TONE setting at treble.

4) Press (BREAK) and type in

CHAIN "WELCOME" press (RETURN)

5) Press 'play' button on cassette recorder and increase the volume very slowly until you get the message that the volume control is properly set - increase the volume very slightly.

6) Allow the program to continue loading - it will tell you when a program is loaded; then switch off your tape recorder.

7) It will ask if the tape record has motor control.
Answer N & press (RETURN). Then follow instructions; if at any time nothing happens press return.

8) Program 2 Index lists all the programs available; pick one.
(Try TELEPHONE or ALPHASORT)

9) Press BREAK, and then type in LOAD "The name of your selected program" & press RETURN & start cassette player.

10) The screen will tell you where you are; if you are a long way from your program run the tape on fast forward to get closer.

11) The screen tells you when it is loading; when this finishes turn off cassette player.
Type in RUN, press (RETURN) and follow any instructions.

12) Repeat for any program you require.

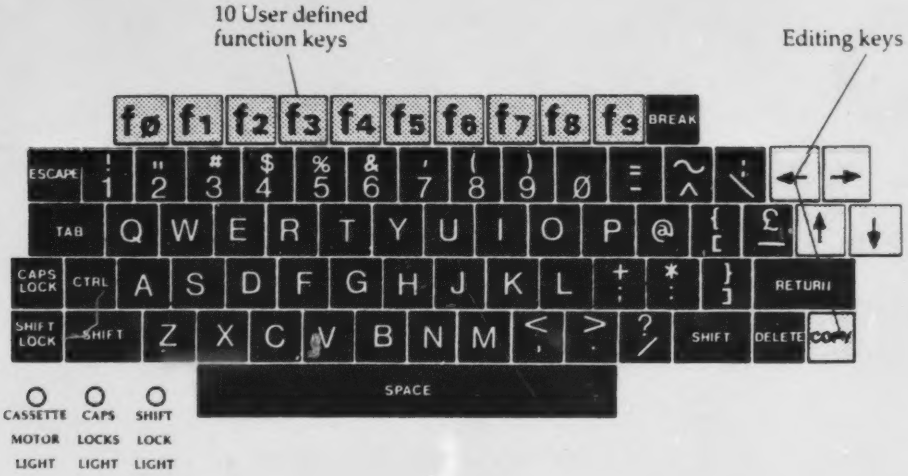
QUESTION - What is the difference between the instructions CHAIN & LOAD?

80

Worksheet 6 **Module B2**

The Keyboard

The Keyboard is very much like that of a typewriter and most of the keys work in the same way:


10 User defined function keys
Editing keys
fø f1 f2 f3 f4 f5 f6 f7 f8 f9
BREAK
ESCAPE
TAB
CAPS LOCK
CTRL
SHIFT LOCK
SHIFT
RETURN
SHIFT
DELETE
COPY
SPACE
CASSETTE MOTOR LIGHT
CAPS LOCKS LIGHT
SHIFT LOCK LIGHT

Find out what the following keys do and write it in below

SHIFT -

RETURN -

CURSOR CONTROL KEYS

DELETE

COPY

ESCAPE

BREAK

CTRL (control key)

TAB

USER DEFINED FUNCTION KEYS - These are to be programmed to produce a character or string of characters eg you could define f0 to produce instruction PRINT when pressed.

Worksheet 7 Module B4

Sizes of Computer

Put a tick after the size of computer which you think you would be most likely to find doing each of the following things:

1. Calculating and printing electricity bills for the London area
   (Mainframe
   (Mini
   (Micro

2. Running Space Invaders in a pub
   (Mainframe
   (Mini
   (Micro

3. Adding up sales at a supermarket checkout.
   (Mainframe
   (Mini
   (Micro

4. Keeping United Kingdom income tax records
   (Mainframe
   (Mini
   (Micro

5. Running the accounts of a medium-sized business
   (Mainframe
   (Mini
   (Micro

Suggest one other likely use for each size of computer:

a) MAINFRAME

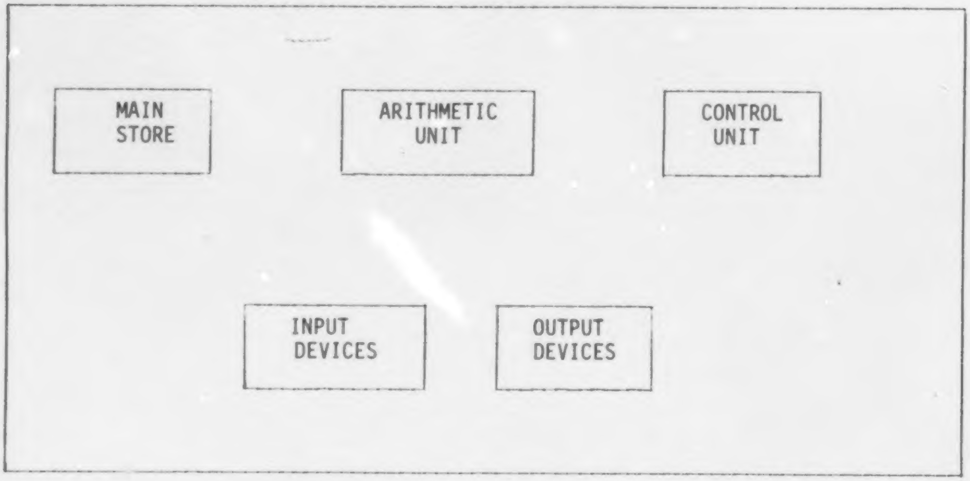
----

b) MINI

----

c) MICRO

Units of a computer


MAIN STORE
ARITHMETIC UNIT
CONTROL UNIT
INPUT DEVICES
OUTPUT DEVICES

The following activities are taking place in a busy railway goods yard:

A Trains arrive with incoming goods

B Trains depart with outgoing goods

C The man in charge of the yard changes the points and tells everyone what to do, following British Rail's standard instructions.

D The yard area is used for filling and emptying the trains.

E Sidings and sheds are used to store goods and waiting trains.

Which of these activities corresponds with which unit in the computer? Put the correct letter inside each box in the diagram.

Worksheet 9 Module B6

Computer Structure - check test 1

Fill in the spaces using words from the list provided.

1) A computer is under the control of a ____________________

2) __________, __________, __________, __________,
__________ are all hardware.

3) ______________ is another word for programs.

4) Magnetic tape and discs are two types of ________________
____

5) A keyboard is often used to ____________ data into a computer
and a VDU is often used for ____________________

6) The internal memory of the computer is called the __________
____

7) The information (data) is processed in the ________________
____

8) The rules by which the computer operate are found in the ________
____

9) The working parts of the computer are called ________________

10) Early computers worked using ________________________

microprocessors, program, mainstore, control unit, backing store, input, arithmetic unit, valves, VDU, computer, magnetic tapes, discs, keyboard, software, output.

Computer Structure - check test 2

Complete the following sentences:-

1) Hard copy is ______________________________

2) Hardware is ______________________________

3) Software is another name for ____________________

4) Three programming languages are __________________

____

5) Debugging a program means ______________________

6) CPU means ________________________________

7) VDU means ________________________________

8) Mainframe computers are ________________________

____

9) Timesharing means ___________________________

____

10) Bar codes are _____________________________

____

Worksheet 11 Module B7

Binary to decimal

Below is a list of codes in binary. The numbers are not always represented by ones and zeros. Ones are also shown as √, ○, YES or (Zeroes are also shown X, □, NO or).

Translate the binary codes into decimal numbers.

Binary	Decimal
1011	
10110	
10000	
○ □ ○	
○ □ □ ○	
YES NO NO NO YES	
YES NO	
√ √ √ √ √	
√ X X √	
(( ) (	
( ) ( ) (	

Worksheet 12 Module B7

ACTIVITY	Binary to ASCII Conversion
PURPOSE	Reinforcement of binary code and its relation to ASCII code
TIME ALLOWED	20-30 minutes
ABILITY NEEDED	Knowledge of, nature of binary code and how digital computers use it. Ability to input and run simple program.
OBJECTIVES	Students will be able to (i) convert binary numbers into ASCII characters (ii) appreciate large memory required to store simple program instructions. (iii) input and run simple program and correct if necessary.
RESOURCES	Worksheet Microcomputer or VDU
PRESENTATION TO STUDENTS	1) Work to be done singly or in pairs 2) Lead on from discussion of binary code in Module 5 3) Give worksheet 1 to either pairs or individuals.
ASSESSMENT	1) Correct completion of worksheet conversion 2) Correct input of program and result
EXTENSION	For students aware of the relationship between binary code, decimal and hexadecimal then the exercise on Worksheet 2 can be used. (BBC micro only)

PROGRAM LISTING

Worksheet 1

```
10   NOW = TIME
20   REPEAT
30   PRINT "YOU ARE CLEVER"
40   UNTIL TIME = NOW + 100
```

Worksheet 2

```
10   FOR J = 32  To 126
20   PRINT CHR$ J,J,   J
30   NEXT J
```

(BBC micro only)

Binary to ASCII conversion

Binary Sequence

110001, 110000, 100000, 1000110, 1001111, 1010010, 100000,
1001010, 111101, 110011, 110010, 1101, 110010, 110000,
100000, 1010000, 1010010, 1001001, 1000010, 1010100,
100000, 1000011, 1001000, 1010010, 100100, 1001010,
101100, 1001010, 101100, 1111110, 1001010, 1101,
110011, 110000, 100000, 1000010, 1000101, 1011000,
1010100, 100000, 1001010

Program (There are 3 lines)

1st line ______________________________

2nd line ______________________________

3rd line ______________________________

NOW INPUT THE PROGRAM & RUN IT - (you will need to scroll it).

State briefly what it does:

Worksheet 12 Module B7

Binary to ASCII conversion

Use the conversion table attached to translate the following binary code into a program - fill in the program in the space below.

Binary sequence

```
110001  110000  100000  1000010  1001111  1010111  111101  1010100
1001001  1001101  1000101  1101  110010  110000  100000  1010010
1000101  1010000  1000101  1000001  1010100  1101  110011  110000
100000  1010000  1010010  1001001  1001110  1010100
1000010  1011001  1001111  1010101  100000  1000001  1010010
1000101  100000  1000011  1001100  1000101  1010110
1000101  1010010  100010  1101  110100  110000  100000
1010101  1001110  1010100  1001001  1001100  100000  1010100
1001001  1001101  10000101  111101  1001110  1001111  1010111  101011
110001  110000  110000  1101
```

Program - (CLUE There are 4 lines)

1st line ______________________________

2nd line ______________________________

3rd line ______________________________

4th line ______________________________

NOW INPUT THE PROGRAM & RUN IT

Did it work? Say briefly what it did

Worksheet 12

Module B7

Binary to ASCII Conversion Table (subset)

Binary	ASCII
100000	SPACE
100001	!
100010	"
100011	#
100100	$
100101	%
100110	&
100111	'
101000	(
101001	)
101010	*
101011	+
101100	,
101101	-
101110	.
101111	/
110000	0
110001	1
110010	2
110011	3
110100	4
110101	5
110110	6
110111	7
111000	8
111001	9
111010	:
111011	;
111100	<
111101	=
111110	>
111111	?
1000000	
1000001	A
1000010	N
1000011	C
1000100	D
1000101	E
1000110	F
1000111	G
1001000	H
1001001	I
1001010	J
1001011	K
1001100	L
1001101	M
1001110	N
1001111	O
1010000	P
1010001	Q

Binary	ASCII
1010010	R
1010011	S
1010100	T
1010101	U
1010110	V
1010111	W
1011000	X
1011001	Y
1011010	Z
1111110	
1101	Carriage return

Worksheet 13 Module B8

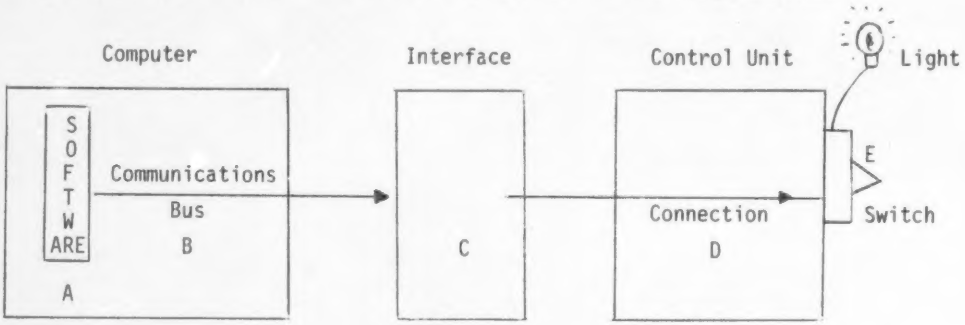
ACTIVITY	Digital/Computer control of a light switch
PURPOSE	To illustrate transfer of information from a computer program to control a switch
TIME ALLOWED	15 mins
PREREQUISITE ABILITY	None
OBJECTIVES	Student will be able to:- (i) state the elements of a computer control system (ii) describe the change in form of information at interface between computer and control unit. (iii) send message in binary code to produce specified results.
RESOURCES	Students, chairs, access to light switch, worksheet.
PRESENTATION TO STUDENTS	See worksheet.

Worksheet 13 Module B8

Digital/Computer Control of a light switch

Role Play Exercise

This represents the transfer of information from a computer program to control a light switch. It can be represented in the diagram below.



1) Students arrange themselves as below.

Student A (Seated)	-	Student B (Standing)	-	a gap of 6 feet	Student C (Seated)	-	Student D (Standing)	a gap of 6 feet	Student E (Seated at light switch)

2) Each student will play a particular role as follows.

A - represents the software in the computer, a program controlling the light switch pattern.

A says to B SWITCH ON, SWITCH OFF, SWITCH ON

B - represents the communications BUS which carries the program instructions to the interface.

B walks to C and says, 1 0 1

C - represents the Interface between the computer and the control unit

C pushes D HARD, SOFT, HARD

D - represents the connection between the interface and the switch.

D walks to E and pushes E HARD, SOFT, HARD

E - represents the switch

E switches the light ON OFF ON.

Digital/Computer control of a light switch

3) The 'system' then returns to the original position and passes another message - try A says SWITCH OFF, SWITCH ON, SWITCH OFF, SWITCH ON, SWITCH OFF, check that message becomes correctly translated and passed along.

4) The group ABCDE consider the following and fill in any gaps.

(i) A - the program was put into the computer in a form which could be understood by us

(ii) B - C - D. Their actions represent the message travelling from A to E.

The message actually travels (in a computer system) as ---

(iii) C's job was to change the message from spoken numbers to pushes, the interface changes the message.

why? ---

(iv) Were there any ERRORS in the transmission? If so what happened? If none, try and put one in, for example B says 1, 0, 3, 1. What happens then?

(v) Try to send a message which switches the light on for 10 seconds and then turns it off. Write in your message below.

(vi) In what form can the program be stored?

(vii) Have you ever heard of EPROM? If so what is it?

----

5) Now come back together as a whole group and report your answers to 4).

Project 2 Section B

'It's your computer'

PURPOSE Reinforce knowledge of components of a computer system and their working.

TIME ALLOWED One to two hours - to be given to students to complete over a period of 2 weeks.

ABILITY NEEDED Introduction to computers - basic literacy.

OBJECTIVES Students will be able to:-

(i) state the components of a computer system and their function
(ii) present information about various computer periferals.
(iii) take a decision on which computer to be selected against stated criteria.

RESOURCES Computer magazines containing advertisements for at least 2 microcomputers and/or reviews of the performance of named systems for more able students.

PRESENTATION TO STUDENTS

1) Students to work singly.
2) Give worksheet and computer magazine(s)
3) Indicate the range of price/type of computer from which student is to make the selection.
4) Set the task either that they want to purchase a computer for their own use, or if they have one they want to change it for a better one.

ASSESSMENT Completed work sheet or verbal presentation of finding, if appropriate.

EXTENSION Could be modified for use within a work situation. Student is to choose a computer system relevant to a 'line' work situation.

Project 2
(Worksheet)

Section B

'It's your computer'

Choose two microcomputer systems using the guidelines given. Complete the grid questionnaire below for each system using the reference material provided. List the uses you want to put the computer to. Make a choice between the two computer systems - which one would you buy?
Then list the five most important advantages that the computer you select has over the other one.

FEATURES	No.1	No.2
1) Name		
2) Place of Manufacture		
3) Basic Cost		
4) Type of Keyboard provided for input		
5) Size of ROM		
6) Size of RAM		
7) Visual Display Unit extra cost if any		
8) VD - colour or BW		
9) Other input devices available eg light pen or joystick		
10) Backing Storage Tape/disc availability & cost		
11) Output devices - other than VDU eg Printer, plotter and cost.		
12) Any other extras available eg expanded RAM & cost		
13) Software available how much is available? and cost		
14) Appearance - is it well designed?		

Uses. What do you want it for? Below are given some reasons; you may use these & or think of your own. Give 4 or 5 uses that you would make of it.

'It's your Computer'

eg. To learn about computers & computing. To learn how to program computers. To play games. To store information eg names, addresses, telephone numbers. To run household/business accounts

MY CHOICE IS

ITS 5 GREATEST ADVANTAGES ARE:-

Project 3

Section B

Types of computer - poster

PURPOSE

To reinforce knowledge of types of Computer and their uses and to stimulate interest

TIME ALLOWED

2 - 3 hours - can be spread out over a period of time.

ABILITY NEEDED

Basic level no special knowledge

OBJECTIVES

Students will be able to

(i) state 3 basic types of computer
(ii) give examples of peripheral devices
(iii) state uses to which each type of computer is put in industry/business/public service
(iv) work as a member of a team

RESOURCES

Computer magazines - (selection of) Scissors, paste, large sheet of paper, felt tip pens

PRESENTATION

1) State purpose to students ie. to produce a poster to illustrate micro - mini and mainframe computers - their differences, cost and application.

2) Organise groups of three

3) Provide list of basic criteria:- Each poster should contain -
   a) Pictures of each type of computer
   b) Pictures of peripheral devices related to each
   c) Statement of the cost range of each type
   d) Short description of where each type might be used and examples of the functions

ASSESSMENT

Based on criteria given above plus standard of display and visual impact. Total group could be used to determine which poster is best presented.

EXTENSION

Group could select one type and be asked to produce simple sales brochure for one type of computer using graphic design facilities where available.

The Keyboard

PURPOSE	To familiarise the student with a specified keyboard
TIME ALLOWED	Approx. 1 hour.
ABILITY NEEDED	Basic level no special knowledge
OBJECTIVES	Students will be able to identify the keys on a specified keyboard, state the function of each, and illustrate where possible.
RESOURCES	Computer keyboard and screen
PRESENTATION TO STUDENTS	(i) State purpose to students and organise into groups of two (ii) Explain strategy; that each group must discover and document the use of each type of key on the keyboard, by means of trial and error. (iii) Results to be presented in the form of a poster, a project, a presentation or a combination.
ASSESSMENT	Based on thoroughness and accuracy of research.

Project 5 Section B

Computer manufacturers

PURPOSE	To study computer manufacturers.
TIME ALLOWED	1½ hours.
ABILITY NEEDED	Basic level, but with understanding of the different sizes of computer.
OBJECTIVES	Students will be able to discover the identity of a variety of different manufacturers of computer and relate this to the type of equipment which they sell.
RESOURCES	Magazines, books, colour supplements
PRESENTATION TO STDUENTS	(i) State purpose to students - that they will be able to fill in the form given overleaf. Some names of manufacturers may be presupplied by the teacher if required. (ii) Students to obtain the facts required by means of research, using material provided as a library.
ASSESSMENT	Thoroughness of research Manufacturers discovered.

Computer manufacturers

MANUFACTURER	TYPE OF EQUIPMENT	COST

BBC Computer Programme - 'The new media'

1. General theme

Communications; the role of the computer as a replacement for letters and newspapers.

2. Detailed breakdown

a) History of mail; cart, stagecoach, pony express, telegraph, phone.

b) Electronic mail. PRESTEL and its uses as a mailing service.

c) British Rail - computerisation of Waterloo station; the timetabling, progress of the trains, et.c.

d) Use of codes for computer communications. Sending messages in parallel and in series.

e) Programs for testing a new areoplane, developed by F International staff working from terminals at home.

f) The potential of databases. French telephone directories being put on a database; demonstration.

g) German system to allow customers to shop and pay bills from home, by means of a terminal connected to shops, banks et.c.

h) The electronic office. Less paper, more computerisation. Word processing, electronic mail et.c.

i) Demonstration on BBC microcomputer; LEN function, and program to right-justify text.

1. General theme

Use of the computer as a means of storing and accessing information.

2. Detailed breakdown

a) Early methods of storing information - Egyptian picture-language, books in the British Library - and their replacement by computerised methods.

b) Conversion of data into computer-readable forms. Punched cards; history and use. Bits, bytes and codes; storing them on a microchip.

c) Fast accessing of stored material; demonstration of finding a book using the British Library's computerised index.

d) Methods of storage. Micro-memory; floppy discs; cassettes; video discs; disc drives; and their respective capacities.

e) Computerisation of hospital meal ordering service using a microcomputer and optical mark recognition.

f) Variables, using a bank vault to illustrate the principles. BBC program to illustrate further.

g) Social implications; security and privacy.

BBC Programme. 'it's on Computer'

This programme is about the use of computer to store information and to make it available quickly (that's called 'accessing')

Before the programme

1) How is information stored now? List below 10 ways in which information can be stored. (not in computers!)

....

....

....

....

....

2) So one of your answers was 'books'; good. Now how do you find out which book contains the information you want? Pick one of the following:-

(i) a recipe for a special meal
(ii) the rules of volleyball
(iii) how to repair a lawnmower
(iv) the life of Mary Queen of Scots

Imagine you are going into a library; what do you think you would have to do to find the right book?

....

....

....

....

....

....

....

During the programme

Watch carefully in particular for ways of inputting data into the computer, the words-bits, bytes and codes and the range of information now being stored on computers.

'It's on Computer'

After the programme

1) Give one example of how information was stored in Ancient Egypt or in other early times.

....

2) How is information stored on a microchip?

....

....

3) Give one example of how data (information) is fed into a computer

....

4) Give 3 examples of where information is stored in a computer system?

....

....

....

5) Give 3 examples of information that is now being stored on computers.

....

....

....

6) Give one advantage & one disadvantage of information being stored on computers?

....

....

7) What personal information about YOU is perhaps stored on a computer?

....

....

....

....

Video:

Making the most of the micro - 'The versatile machine'

Section B

1. General theme

6

The BBC micro in perspective - how it works and what it can do.

2. Detailed breakdown

a) A disabled student with a hand attachment to operate his micro, who uses it for all his studies and can operate up to six switches in his house via the computer.

b) Introducing the BBC micro and its peripherals, including simulation program of how a cassette reads information off tap.

c) Optimisation of yacht sales on computers - how this was done on a large computer 20 years ago, and how a micro can do it now. Binary, and & or gates.

d) Ian Mcnaught-Davis gets inside the micro and shows us how information travels. Bits, bytes, C.P.U., memory, RAM, ROM, chips

e) Use of micro to store information about houses and view them from different positions. Some other methods of inputting information.

Program Name

KEYBOARD

BASIC Version

BBC BASIC

Program Function

This program shows the user the basics of keyboard use and then tests how well these have been learned by timing how long is required to find particular keys.

Special features

None

Available from:

Supplied free on the WELCOME tape with the BBC microcomputer.

Program Name

Module B5

ALPHASORT

BASIC Version

BBC BASIC

Program Function

This program accepts a list of up to ten words from the user and then sorts them into alphabetical order. The sort can be seen occurring in slow motion to show the principles behind it.

Special features

None

Available from:

Supplied free on the WELCOME tape with the BBC microcomputer.

Section C - UNDERSTANDING PROGRAMS

		Page
	The aim of this section is to demonstrate to the student the way in which a program works, in order to show the way in which human instructions underlie the behaviour of computer systems and so demystify the use of a computer to perform a task.	
*	Module C1, *WHAT IS A PROGRAM*, introduces the principles of writing an efficient set of instructions for performing a task.	96
*	Module C2, DRAWING A FLOWCHART, shows how such a set of instructions can be illustrated diagrammatically.	98
*	Module C3, PROGRAM CONTROL, looks at program control; what it is, and examples of it in computers and other devices.	100
*	Module C4, WRITING A PROGRAM, imparts a simple level of programming skill to the student, by means of worksheets and hands-on activity.	102
	Modules C5 and C6, FURTHER FLOWCHARTING AND FURTHER PROGRAMMING, develop these flowcharting and programming skills further.	104, 106
	Modules C7 and C8, INTRODUCTION TO AND WRITING A GRAPHICS PROGRAM, widen the scope by introducing graphics statements and providing practical sessions to illustrate their use.	108
	Modules C9 and C10, WRITING AND TESTING A PROJECT PROGRAM, allow students to develop a complete program according to their ability and skill.	112
	Module C11, PROGRAMMING LANGUAGES, looks at a variety of other programming languages and typical applications.	114
	Module C12, AN ALTERNATIVE LANGUAGE, allows students a closer look at an alternative language to BASIC.	116

Module specific resources are referred to under each Module description and are grouped at the back of the section together with the following materials which may be used at the teacher's discretion.

			Page
Projects:	6	Project programs	145
	7	A computer language	147
	8	Wages program	149
Videos:		Making the most of your micro - 'Getting down to BASIC'	153

Key vocabulary of core modules is explained in the GLOSSARY 505

* denotes core modules

MODULE C1 WHAT IS A PROGRAM

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing

Aim 3 Objectives: The student will be able to:
(i) correctly identify the function of and need for software

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules, particularly the nature of software and program control from module B1	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
Examples of programs of instructions found in everyday life	That instruction programs are not limited to the world of computers	Contributing from general knowledge	Discussion to consider examples of programs of instructions, illustrated by AVA such as recipe book, car maintenance manual
A verbal program	The qualities of an effective set of instructions; that they must be CLEAR, ACCURATE, and SEQUENCED	Giving an effective set of instructions for performing a task	Student directing the teacher in performing a simple practical activity such as described in worksheet 14, using a limited set of vocabulary. Analysing this to determine the criteria for an effective set of instructions
A variety of non-computer programs	The difficulty of turning human activities into precise lists of instructions	Working in groups to devise effective instructions	Students to work in groups devising instructions for performing simple tasks. eg. making tea, tying a necktie, brushing teeth, changing a plug, boiling an egg, sending a letter. Plenary session
			Period of practice/project

MODULE C1 WHAT IS A PROGRAM?

Key vocabulary	PROGRAM SOFTWARE LANGUAGE
Resources	Examples of instructions, eg. recipes, car repair manuals Box of matches Worksheet 14 'Striking a match' (page 118)
Assessment	List of instructions prepared by students

MODULE C2 DRAWING A FLOWCHART

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing

Aim 3 Objectives: The student will be able to:
(ii) illustrate a logical sequence of instructions by drawing a flowchart or by another appropriate method

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules,particularly C2 and the difficulty of giving clear instructions	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
Relevant new vocabulary	How a flowchart can be used to illustrate a logical sequence of instructions	Drawing on previous experience to contribute examples of flowcharts or similar pictorial aids	Introduce the use of pictures to give added clarity and effectiveness to a logical sequence of instructions.Discuss, illustrating with visual material to show examples
Flowchart symbols	Combining flowchart symbols to produce a simple flowchart	Using templates to reproduce a simple flowchart	Explaining flowcharting symbols and illustrate by flowcharting simple activity on board or OHP;see worksheet 15. Students to draw flowchart using templates
Flowchart symbols and their use	How to turn a list of instructions into a flowchart,and to amend an existing flowchart	Drawing and amending flowcharts	Student activities: a)to make the sample flowchart more complex b)to flowchart similar simple activity such as crossing the road
A computer program	How to flowchart a simple computer program	Relating flowcharting to a simple computer task	Show the relevance of this technique to computer instructions, illustrating with a simple example
			Period of practice/project

MODULE C2 DRAWING A FLOWCHART

Key vocabulary	FLOWCHART
Resources	Templates, pencils Sample flowcharts Worksheet 15 (Page 119)
Assessment	Student performance at worksheet 15

MODULE C3 PROGRAM CONTROL

COURSE AIMS AND INSTRUCTIONS

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing

Aim 3 Objectives: The student will be able to:
(i) correctly identify the function of and need for software
(iii) read and amend a program
(iv) from the specification provided, write, input and run a simple program involving input, processing and output

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules particularly program control (B1,C1)	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A group work or computer check-test
Vocabulary relating to program control	How a micro-controlled device will follow preset instructions which control its activities	Programming a tank to perform a pre-set task successfully	Introduction of special languages for programming computers. Demonstrate a simple language by student exercise involving programmable tank - see worksheet 16
Vocabulary relating to new language	How different languages may be used to program computers	Extract information from visual material or successfully use a programming language to perform a set task	Use of visual material (eg. excerpts from computer programme 'Just one thing after another') or another language such as LOGO, PROLOG etc. to show other types of computer program. Linked task for students
Relevant BASIC statements	The format and function of a simple BASIC program, and how the program controls a computer's behaviour	Using instructional guides to enter and run a simple BASIC program	Introduce BASIC and demonstrate running a BASIC program. Students to use worksheet 17 to perform simple tasks on computer familiarising them with BASIC rules and vocabulary
			Period of practice/project

MODULE C3 PROGRAM CONTROL

Key vocabulary

PROGRAM

LANGUAGE

BASIC

Simple basic commands

Resources

Programmable tank (Page 407)

Worksheet 16 'Programmable tank exercise' (Page 121)

Worksheet 17 'What will the computer do?' (Page 125)

Video playback facilities

'BBC Computer Programme - Just one thing after another' (Page 151)

Assessment

Student operation of computer (profile) (Page 372)

Performance at worksheets

MODULE C4 WRITING A PROGRAM

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 3 Objectives: The student will be able to:
(i) correctly identify the function of and need for software
(ii) illustrate a logical sequence of instructions by drawing a flowchart or by another appropriate method
(iii) read and amend a program
(iv) from the specification provided, write input and run a simple program involving input, processing and output

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
Elements of a computer system BASIC statements	How specific BASIC statements form a program to input,process and output information	Identifying the function and sequence of named BASIC statements.Entering a program at a keyboard and successfully running it	Exercise to link the functions of a BASIC program back to elements of a computer system, such as worksheet 18
BASIC statements and rules of grammar	The nature of computer programs and the activities involved in developing one	Writing, entering, running and storing a program	Students to write, input, run and save successfully a BASIC program from a specification and flowchart provided. Different specifications may be given to different students according to ability, eg. worksheets 19, 20
Software met previously	How the behaviour of the computer when performing a task is completely controlled by program instructions, and may easily be changed	Suggesting simple alterations to a named program	Demonstration of listing the instructions for a program used earlier in the course, eg. MEET - and altering and running the program
			Period of practice/project

MODULE C4 WRITING A PROGRAM

Key vocabulary	Relevant commands and statements (as in worksheets)	
Resources	Worksheet 18 'Programming elements'	(Page 127)
	Worksheet 19 'Programming exercise'	(Page 129)
	Worksheet 20 'BASIC programming'	(Page 131)
	Program MEET or another suitable (see Section A)	(Page 40)
Assessment	Performance on tasks in worksheets	
	Operations profile	(Page 372)

MODULE C5 FURTHER FLOWCHARTING

COURSE AIMS AND OBJECTIVES

Aim 2 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary, both verbally and in writing

Aim 3 Objectives: The student will be able to:
(ii) illustrate a logical sequence of instructions by drawing a flowchart or by another appropriate method

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules: from C2, flowcharting symbols	Relevant concepts from previous modules. Flowcharting principles and techniques	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
Flowcharting symbols, including relevant new ones	The techniques of drawing a useful flowchart	Drawing a flowchart to illustrate a logical sequence of instructions	Students to work individually or in pairs to provide flowchart for a specified activity, set of instructions or computer program - see worksheet 21 for suggestions. Individual guidance to be provided by teacher as appropriate
Flowcharting applications	Who would use a flowchart, and what for	Contributing to class discussion, from general knowledge, observation, and previous sessions	Possible solution to exercise to be explained or demonstrated. Class discussion to decide how and why programmers and others would use this technique
			Period of practice/project

MODULE C5 FURTHER FLOWCHARTING

Key vocabulary	See module C2
Resources	As module C2 (Page 98) Worksheet 21 'Flowcharting exercises' (Page 132)
Assessment	Performance of flowcharting tasks

MODULE C6 FURTHER PROGRAMMING

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
- (i) use a simple predefined computer vocabulary correctly, both verbally and in writing

Aim 3 Objectives: The student will be able to:
- (i) correctly identify the function of and need for software
- (ii) illustrate a logical sequence of instructions by drawing a flowchart or by another appropriate method
- (iii) read and amend a program
- (iv) from the specification provided, write,input and run a simple program involving input, processing and output

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
Relevant vocabulary. Program name	How instructions saved on backing storage can be loaded and re-used	Loading and running program	Students to work individually or in pairs loading and running programs saved in module C3
New BASIC statements and rules of grammar	Decision-making and alternate paths in programs	Developing a specified program, ie. a)flowcharting b)writing c)inputting d)testing e)saving	Introduce and demonstrate further programming statements and concepts. Students to develop specified programs using these and earlier statements - for suggested programs, see worksheets 22-26
New BASIC statements and grammar	The use of BASIC statements in a previously used program		Demonstration of listing a program used earlier in the course, to show how the new BASIC statements are used in it, eg. program CLASSFILE
			Period of practice/project

MODULE C6 FURTHER PROGRAMMING

Key vocabulary	BASIC commands and statements DEBUGGING
Resources	Worksheets 22 to 25 'Programming exercises' (Page 133-7) Worksheet 26 'Program correction (debugging)' (Page 138) Program CLASSFILE (see Section A) (Page 41)
Assessment	Production of program from selected worksheet Program correction test worksheet 26

MODULE C7 INTRODUCTION TO GRAPHICS PROGRAMMING

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 3 Objectives: The student will be able to:
(i) correctly identify the function of and need for software
(iii) read and amend a program
(iv) from the specification provided, write, input and run a simple program involving input, processing and output
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use and under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A, or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-list
New graphics vocabulary	How graphics facilities can be useful in a program	Identifying the use of graphics in computer programs previously run	Introducing computer graphics; class discussion to identify uses in programs which they have already encountered. Worksheet 27
Program using graphics	The use of graphics instructions to show colour, line and sound on a screen	Suggesting simple alterations to the graphics in a program	Demonstration and listing of program using graphics; altering an instruction to show the result (eg. changing a colour) and rerunning
Relevant BASIC statements	How to input,run and amend a graphics program	Using instructional guides to enter and run a BASIC program involving graphics	Introduction of simple graphics instructions in BASIC. Students to use worksheets to perform simple tasks on the computer familiarising them with the use of these instructions - see worksheet 28, and 29 if more time is available
			Period of practice/project

MODULE C7 INTRODUCTION TO GRAPHICS PROGRAMMING

Key vocabulary	GRAPHICS	
	Graphics commands and statements	
Resources	Worksheet 27 'Graphics on the BBC micro'	(Page 139)
	Worksheet 28 'Graphics exercise'	(Page 140)
	Worksheet 29 'Graphics program'	(Page 141)
	Software to demonstrate use of graphics, eg. programs on the BBC WELCOME TAPE (available free with BBC microcomputers)	
Assessment	Performance on worksheets	

MODULE C8 WRITING A GRAPHICS PROGRAM

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 3 Objectives: The student will be able to:
(i) correctly identify the function of and need for software
(ii) illustrate a logical sequence of instructions by drawing a flowchart or by another appropriate method
(iv) from the specification provided, write, input and run a simple program involving input, processing and output
Aim 5 Objectives: The student will be able to: (i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
Relevant BASIC statements and grammar	How graphics facilities are incorporated into a program	Developing a specified graphics program, ie. a)flowcharting (if appropriate) b)writing c)inputting d)testing e)saving	Students to work individually or in pairs to develop specified graphics programs, using statements learned in module C8 and any additional statements required. Individual guidance from teacher as required. For suggested programs, see worksheets 30 and 31
Relevant computer instructions		Running a program and explaining what it does	Demonstration of successful programs by students
			Period of practice/project

MODULE C8 WRITING A GRAPHICS PROGRAM

Key vocabulary	As module C7	
Resources	Worksheet 30 'Modes, colours, graphics'	(Page 143)
	Worksheet 31 'Graphics programming'	(Page 144)
Assessment	Performance at exercise from worksheets	

MODULES C9/C10 WRITING A PROJECT PROGRAM/TESTING A PROJECT PROGRAM

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 2 Objectives: The student will be able to:
(ii) operate a specified microcomputer or VDU and use named facilities
Aim 3 Objectives: The student will be able to:
(i) correctly identify the function of and need for software
(ii) illustrate a logical sequence of instructions by drawing a flowchart or by another appropriate method
(iv) from the specification provided, write, input and run a simple program involving input, processing and output
(vi) develop and test a specified project program

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
Previous vocabulary and any new BASIC statements required	Consolidating understanding of programming and related concepts	Consolidating flowcharting, programming and operational skills learnt in previous modules. Combining these skills to successfully complete a task	Students to work individually on the development of a programming task geared to each student's ability. Suggested 'project programs' are found in the project section. Guidance should be provided by the teacher and by the provision of instructional sheets and textbooks where necessary. Each student should be encouraged to achieve his/her task by the end of the two sessions, and this should influence the selection of the program. There may be a short period to demonstrate programs at the end
			Period of practice/project

MODULES C9/C10 WRITING A PROJECT PROGRAM/TESTING A PROJECT PROGRAM

Key vocabulary	All vocabulary in Section C
Resources	Project programs (Page 145)
Assessment	Performance at project program

MODULE C11 PROGRAMMING LANGUAGES

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 2 Objectives: The student will be able to:
(iii) operate a specified microcomputer or VDU and use named facilities
Aim 3 Objectives: The student will be able to:
(i) correctly identify the function of and need for software
(v) list three programming languages and describe the type of applications for which they are most suitable

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
Types of language	How a variety of different languages may be used to program computers	Extracting relevant information from visual material	Explain the use of languages other than BASIC to program computers, and introduce different types of language. Excerpts from BBC Computer Programme 'Talking to a machine', with linked task
New computer languages and their use	Typical applications of a specified range of languages	Relating knowledge of BASIC to another language to decipher a program	Discuss several of the most commonly used computer languages, eg. COBOL, FORTRAN etc. and typical applications. Illustrate with listings of simple programs in these languages. Student exercise to decipher one of these
Statements in a particular language	How a named language operates	Using a named language to perform a set task	Demonstration of an alternative language to BASIC running on a computer (MINILOGO may be used)
			Period of practice/project

MODULE C11 PROGRAMMING LANGUAGES

Key vocabulary	ASSEMBLER HIGH-LEVEL COBOL BASIC FORTRAN (other appropriate languages)
Resources	Video playback facilities Video 'The Computer Programme - Talking to a machine' (Page 152) Program listings Alternative software facilities e.g. MINILOGO (Page 154)
Assessment	Performance at deciphering program

MODULE C12 AN ALTERNATIVE LANGUAGE

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 2 Objectives: The student will be able to:
(iii) operate a specified microcomputer or VDU and use named facilities
Aim 3 Objectives: The student will be able to:
(i) correctly identify the function of and need for software
(iii) read and amend a program
(iv) from the specification provided, write, input and run a simple program involving input, processing and output
(vi) list three programming languages and describe the type of applications for which they are most suitable

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A of other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
New vocabulary. Rules/ statements of the specified language	The use of the specified language to perform a task	Assisting in demonstration	Introduce the language to be used, eg. PROLOG LOGO or similar. Explain the underlying principles and the type of application areas for which it is suited - demonstration of its use
Rules/Statements of the specified language	How to write and run a program in the language	Developing programs, using worksheets	Students to work through exercises/set tasks in the language, using worksheets and with individual guidance from the teacher as required
Language features	How this language compares with others encountered	Contributing to group discussion from experience and previous knowledge	Evaluation of the language in group discussion. Comparison with BASIC and any other languages experienced
			Period of practice/project

MODULE C12 AN ALTERNATIVE LANGUAGE

Key vocabulary	Commands and statements in language being used
Resources	Alternative software facilities, eg. MINILOGO (Page 154) Appropriate worksheets
Assessment	Performance at set tasks

Worksheet 14 Module C1

Striking a match

1. Objectives

The student will be able to:

(i) appreciate the need to think out the instructions for performing a set task in advance of giving them.

(ii) state that such instructions need to be CLEAR, ACCURATE and SEQUENCED.

2. Plan

a) State the task to be undertaken; i.e. to instruct a volunteer in how to pick up a box of matches from a table and strike one. List the instruction set available, e.g.

open
close
stop
start
raise
lower
push
move

Explain that these are the only verbs which will be understood by the volunteer.

b) Class to work individually or in groups to produce a suitable set of instructions.

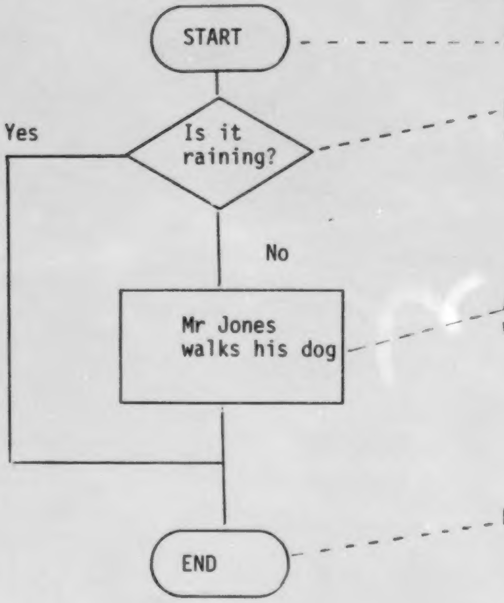
c) Teacher to act as volunteer and to attempt to follow instructions given by students, taking each instruction as literally as possible. (With a little denseness, it is easy to arrange to spill matches on the floor, particularly if the matchbox has been prepared beforehand by having the tray put in upside-down!)

d) Analyse with class what went wrong. Exercise may then be repeated.

Worksheet 15 Module C2

Basic Flowcharting

Below is a simple flowchart describing a simple activity - Mr Jones likes to take his dog for a walk in the park but he will not go if it's raining.


START
Yes
Is it raining?
No
Mr Jones walks his dog
END

BOX SHAPES

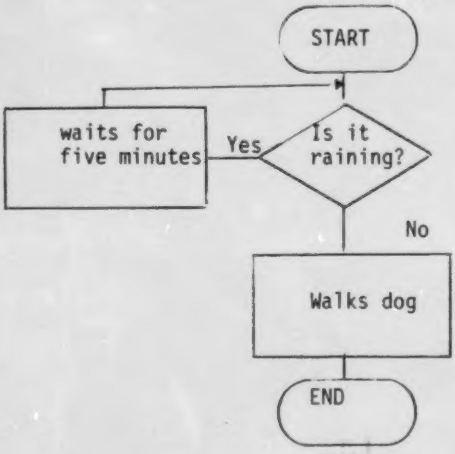
Start box

Decision box - a question - yes or no

Action box - describes what is done

Finish

This can be made more complicated - he may wait five minutes & then check again - the flowchart below shows this


START
waits for five minutes
Yes
Is it raining?
No
Walks dog
END

This is called a LOOP
There is a problem with this one - what is it?
Answer here

____

____

____

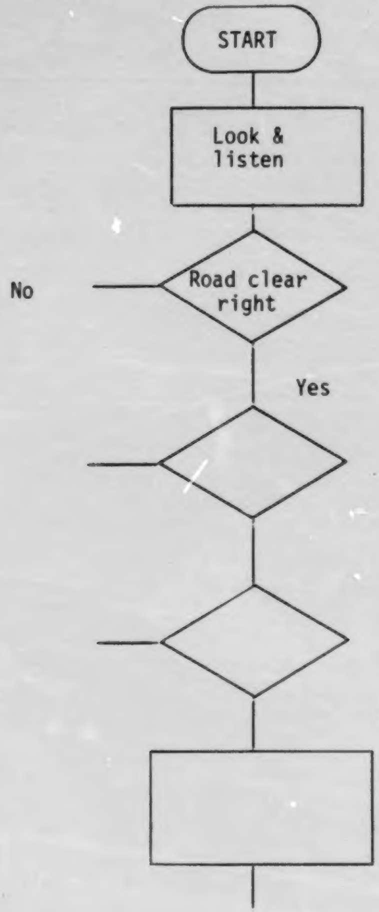
____

____

____

____

Below is a flowchart for crossing the road based on instructions, look right, look left, look right again, if road clear then cross - fill in spaces & complete connections


START
Look & listen
No
Road clear right
Yes

144

Worksheet 16 Module C3

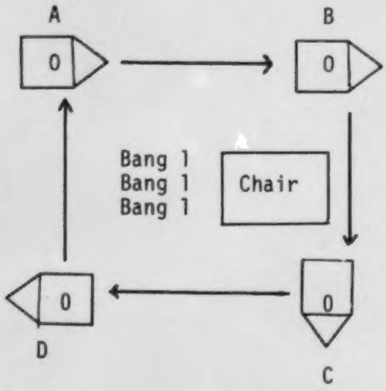
ACTIVITY	**Programmable tank exercise**
PURPOSE	Illustrate and reinforce need for a program & microprocessor control
TIME ALLOWED	30 mins
ABILITY NEEDED	No special previous knowledge - introduced as below
OBJECTIVES	Students will be able to:- (i) State that a computer will only do what it is told to. (ii) Appreciate the need for a precise statement of instructions to control a computer. (iii) State why a special language is needed in order to communicate with a computer. (iv) Give an example of microelectronic control
RESOURCES	Bigtrak - programmable tank. Work sheets. Large area in which tank can move.

PRESENTATION TO STUDENTS

1) Show BIG TRAK, demonstrate its abilities, list what it will do on board. It is controlled by a computer and is capable of storing instructions and then following them.

2) Class decides what they want the tank to do - build up a map on the board, or they draw one - individually or in pairs - on board may be best.

eg



What else do you need to know?

distances AB, BC, CD, DA ?

1st STEP TO DECIDE WHAT YOU WANT IT TO DO

3 Break it down into steps - be precise, e.g.

a) Tank goes A-B, 3 times its length
b) Tank turns right through 90°
c) Tank goes forward 3 times its length (B-C)
d) Tank turns right through 90°
e) Tank goes forward 3 times its length (C-D)
f) Tank turns right through 90°
g) Tank goes forward 3 times its length (D-A)
h) Tank fires 3 times

This is now a precise set of instructions but you have to TELL the tank HOW you need a special 'language' - you have to put in the instructions through the keyboard or control panel.

LIST ON BOARD

4 Write instructions in 'Basic BIGTRAK' on board use keyboard illustration provided.

a) ↑3
b) → 15
c) ↑3
d) → 15
e) ↑3
f) → 15
g) ↑3
h) ☼ 3

or ↑3, →15, ↑3, →15, ↑3, →15, ↑3, ☼3.

5 Program the TANK - let it run - will it OBEY?

A variation can be to divide class into groups, each group prepares a plan (see 2). This plan is then given to another group to "program" and the "program" is given to another group to input.

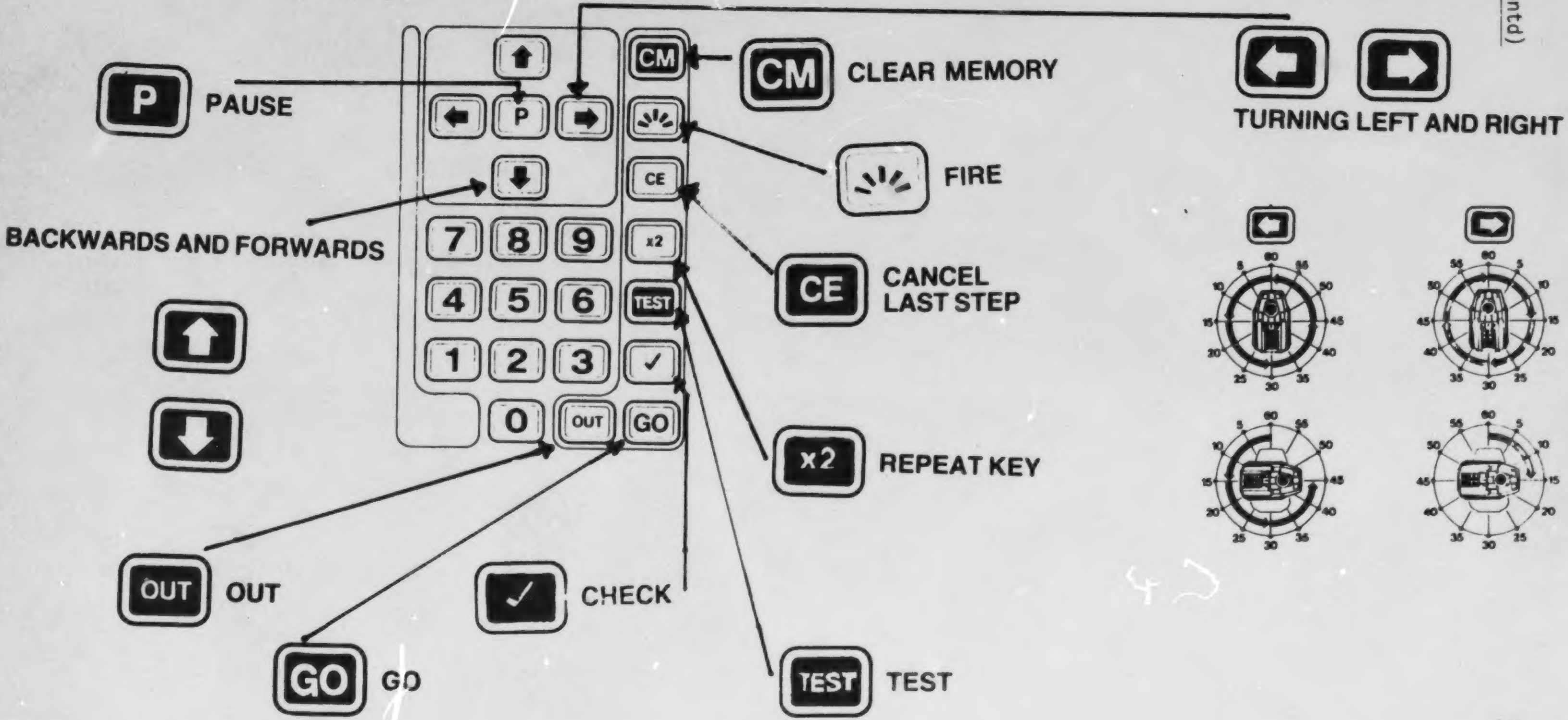
ASSESSMENT Observation of activity.

Questions to class at end.

THE KEYBOARD

The keyboard is placed on the top of **bigtrak**. By pressing various combinations of keys on the keyboard, you can programme **bigtrak** to obey your commands.

Each key has a different purpose and is marked either with a letter, number or a symbol.


CM
P
CE
x2
TEST
7 8 9
4 5 6
1 2 3
0
OUT
GO
P PAUSE
CM CLEAR MEMORY
TURNING LEFT AND RIGHT
FIRE
BACKWARDS AND FORWARDS
CE CANCEL LAST STEP
x2 REPEAT KEY
OUT OUT
CHECK
GO GO
TEST TEST
60 5 10 15 20 25 30 35 40 45 50 55

Worksheet 17 **Module C3**

What will the Computer do?

Time allowed ½ hr Name ....

What will a computer do? - not a lot, if you don't give it some instructions. Below are some instructions for your BBC computer. Type them in, see what happens and record what happened in the space provided.

```
SWITCH THE COMPUTER ON & CHECK THAT THE
SCREEN SAYS

BBC Computer 16K (or 32K)
BASIC
>                            Then you are ready to go
```

1) Type in carefully

```
10 PRINT "WHAT IS YOUR NAME?"        press RETURN
20 INPUT NAME$                       press RETURN
30 PRINT "HELLO";NAME$               press RETURN
```

Now type in RUN and press RETURN
Record what happened below.

NOW TYPE IN NEW & press RETURN

2) Type in:-

```
10 MODE 5
20 MOVE 200,200        press RETURN after each line
30 DRAW 800,200
40 DRAW 800,800
50 DRAW 200,800
60 DRAW 200,200
```

Now type RUN & press RETURN

Record what happened below

NOW TYPE IN NEW & press RETURN

3) Type in:-

```
10 SOUND 1,-15,97,10     do not forget
20 SOUND 1,-15,105,10         RETURN
30 SOUND 1,-15,89,10
40 SOUND 1,-15,41,10
50 SOUND 1,-15,69,20     Now type in RUN & press RETURN
```

Record what happened.

NOW TYPE IN ---- & press ----

4) Type in:-

```
10 PRINT "GIVE ME FOUR NUMBERS"
20 INPUT A,B,C,D
30 LET T=A+B+C+D
40 PRINT "THE TOTAL IS ";T
```

Now RUN it.
Follow the instructions which the screen gives you.

Record what happened.

You have now seen four things that the computer can do, but only when given instructions. These sets of instructions are called PROGRAMS.
Try to answer the following questions.

1) Why do you put a number 10, 20 etc on each line of the program?

2) What does pressing the RETURN key do?

3) What does the instruction PRINT tell the computer to do?

4) Why did you have to type in NEW after each program?

Programming elements

The following six lines are a BASIC program, but they have been put into the wrong order:

```
LET E=D/3
PRINT "TOTAL IS"; D
INPUT A
INPUT C
PRINT "AVERAGE IS"; E
LET D=A+B+C
INPUT B
```

1. Which lines are input, which are processing and which are output? (Put I, P or O by each line)

2. Put the correct line number in front of each line, starting at 10 for the line which you think comes first and then increasing in 10s.

3. Rewrite the program to perform the same function but for four numbers, not three.

BASIC programming

Name ....

A PROGRAM is - a set of instructions to control the computer
- written in a special language - BASIC is an example
- written in a sequence - one thing after another

A PROGRAM will look like this -

```
 10 REM *** JEAN ***
 20 NAME1$="JEAN":DATE1$="19TH JULY"
 30 NAME2$="HELEN";DATE2$="6th AUGUST"
 40 NAME3$="NICK":DATE3$="12 NOVEMBER"
 50 NAME4$="STEVE":DATE4$="12 MAY"
 60 PRINT "ENTER KEYWORD"
 65 INPUT ITEMs
 70 IF ITEM$=NAME1$ THEN PRINT DATE1$
 80 IF ITEM$=NAME2$ THEN PRINT DATE2$
 90 IF ITEM$=NAME3$ THEN PRINT DATE3$
100 IF ITEM$=NAME4$ THEN PRINT DATE4$
110 END
```

these are line numbers to put in correct sequence

these are COMMAND STATEMENTS

these are instructions/ variables (numbers or letters)

COMMANDS

PRINT	-	tells computer to print on screen what follows - this must be in inverted commas - "......."
INPUT	-	tells computer to expect something to be typed in & to store it
$ (DOLLAR)	-	this is used to mark a string of letters & store them eg INPUT NAME$ - you can then get it to print it later see line 20 above as well
LET	-	This sets a number or list of numbers LET Z = 5 PRINT Z + 6 & the computer will print 11
LOAD	-	This will load a program stored on tape or a disc into the computer, but you must give the name eg. LOAD "JEAN"
CHAIN	-	This will load from tape or disc but will keep loading programs.
SAVE	-	This will store a program on disc or tape from the computer.
RUN	-	runs a program
LIST	-	makes the computer list the program stored in it.
NEW	-	this clears the computers memory - if you want to put in a new program
OLD	-	will bring back an old program

BASIC programming

IF......THEN - This gives the computer a choice eg

```
IF AGE <18 THEN PRINT "YOU ARE TOO YOUNG"
IF AGE >18 THEN PRINT "YOU ARE TOO OLD"
```

See lines 70, 80, 90, & 100 as the program on last page

GOTO - this tells the computer to skip lines in the program and GOTO a particular line eg GOTO 10

Rearrange this list of program statements into the correct order

```
10 PRINT "WHAT IS YOUR NAME"          (This is the start)

   PRINT "WHO WON THE WORLD CUP IN 1982 ";  NAME$
   INPUT NAME$
   IF A$ = "ITALY" THEN GOTO 80
   PRINT "CORRECT"
   END
   INPUT A$
   PRINT "WRONG IT WAS ITALY"
   GOTO 90
```

(a clue; first decide what you think this program is going to do)

Write in the program in its correct form below. Input the program & make sure that it runs

10 ____________________

20 ____________________

30 ____________________

40 ____________________

50 ____________________

60 ____________________

70 ____________________

80 ____________________

90 ____________________

Draw a flowchart to illustrate the program logic.

Worksheet 20 Module C4

Programming exercise

Name ....

1) Go to a computer, switch it on.

2) Type in the following program - remember you have done it before.

```
10  PRINT "WHAT IS YOUR NAME?"
20  INPUT NAME$
30  PRINT "HELLO "; NAME$
```

3) Now type RUN & press RETURN, follow the instructions just to remind you what happens.

4) The Numbers, 10,20,30 - tell the computer the sequence in which to follow the instructions

PRINT - tells it to print on the screen what comes next.
INPUT - tells it to expect you to type in something
$ - this the dollar sign is used to mark something that you put in so you can call it up.

5) Try now to type in some more instructions (program) to extend what you have got.

Get it to say: What day is it today ....(your name)......................
You then type in the day &
the computer says. Thanks, it sure is ....(the day typed in)....................

6) Write this part of the program here.

40 PRINT ____

____

50 ____

____

60 ____

____

7) Input your program, run it. Now store it on tape as "HELLO"

8) Clear the program from memory.

9) Load "HELLO" from tape & run.

Flowcharting exercises

Draw a flowchart to illustrate the logic of one of the following:

a) Filling a bath with the correct amount and temperature of water.

b) A computer program to input three numbers from the screen and sort them into ascending order.

c) Making a sponge-cake.

d) A computer program to input the user's date-of-birth, work out his star sign, and tell him what it is.

Worksheet 22 Module C6

ACTIVITY	Programming exercise
PURPOSE	To give individual interaction with and control over the computer
TIME ALLOWED	Varies with ability.
ABILITY NEEDED	Coverage of basic programming modules
OBJECTIVES	Students will be able to:- (i) state the need for & function of programs (software) (ii) operate a specified microcomputer (iii) accept the computer as a machine to be controlled. (iv) write & document simple programs.
RESOURCES	Work sheets and microcomputers
PRESENTATION TO STUDENTS	Varying methods - see accompanying worksheets
ASSESSMENT	Completion of task, presentation of required documentation.
EXTENSION	Range of worksheets available.

Programming Exercises

Time allowed 1 hour

1) Below are a list of things a computer could be programmed to do.

2) Select one that interests you - none of them do?- well, think of something yourself & write it in the space provided.

3) Write a program which gets the computer to carry out the task. First produce a flowchart or any other list of statements which will help you. Then, write the program, directly into the computer if you wish & test it.
IF YOU REQUIRE HELP THEN ASK!

4) When you have been successful then write out your program.

5) Hand in (i) Your flowchart or list of stages
(ii) Your program listing
(iii) A clear description of what the program does

COMPUTER TASKS (Can also be used as project programs)

1) The user inputs a number & the computer decides & prints out whether it is greater or less than 10.
2) The user inputs the amount of rainfall each month over a 12 month period & the computer outputs annual rainfall (could be extended to produce average monthly rainfall)
3) User inputs 4 numbers & computer prints out the largest.
4) A quiz program containing one question requiring a word answer. eg. what colour is grass? & one question requiring a number answer. eg. How many days in March?
5) A programme to convert 0°C to °F & vice versa (or inches to centimetres)
6) User inputs name & computer prints it 10 times on the screen.
7) User inserts price & size of 2 different brands of an article (cornflakes, soap powder) & the computer outputs which is the best buy.
8) Input the cost of an article, the computer adds on 20% profit and 15% VAT & then outputs the retail price.
9) Input the cost of an article, the cost of postage & packing & the deposit paid and the computer outputs the amount that customer is invoiced for.
10) Computer to pick a number between 1 & 10. The user inputs a guess until the correct number is selected.
11) Your choice ______________________________

____

Programming Exercise

Problem Write a program to store 10 names of people, their address & telephone number & date of birth, with the month in letters; when a month is typed in, the computer should print out details of everyone born in that month. (To make good use of if, data, read, & input statements, & screen layout)

Clue on data

John Smith	10 Downing Street	01-346-12359	5	JUNE	1938
D1$	D2$	D3$	D4$	D5$	D6$

Suggested Program

```
 10 MODE3 :REM  80 CHR'S PER LINE
 20 PRINT "TO FIND BIRTHDAYS IN A MONTH,ENTER NAME OF MONTH ";
 30 INPUT M$
 40 PRINT
 50 FOR K=1 TO 10
 60 READ D1$,D2$,D3$,D4$s,D5$,D6$
 70 IF D5$=M$ THEN PRINT D1$;" ";D2$;" ";D3$:" ";D4$:" ";D5$;" ";D6$
 80 NEXT K
 90 PRINT
100 PRINT "THAT IS THE END OF THE LIST"
110 END
120 DATA "JOHN SMITH", "10,A STREET,LONDON", "01-573-6838","5","JUNE","1930"
130 DATA "FRED JONES","15 THE ROAD,CHELTENHAM","564849","23","OCTOBER","1964"
140 DATA "PETER PAN","12,FAIRY LANE,FAIRYLAND", "999","29","FEBRUARY","0000"
150 DATA "MARK ROGERS","56 LONG LANE,LONDON","01-987-9887","1","MAY","1961"
160 DATA "NIGEL HILL","12 WALLY LANE,BERKENHEAD","72373738","6","JUNE","1947"
170 DATA "BEN DOON","95, THE HIGHLANDS,SCOTLAND","43730","26","MARCH","1934"
180 DATA "BETTY WONT","48,STEEP HILL,RUGBY","767899","16","OCTOBER","1967"
190 DATA "RONALD MACDONALD","12,HIGH ST,ANYWHERE","67677","8","JULY","1961"
200 DATA "JOE GREEN","12,THE TERRACE,AUSTRIA","036538","31","FEBRUARY", "1823"
210 DATA "MOHAMED ALI","SALT LAKE CITY,USA","864257688","5","MAY","1947"
```

Worksheet 24 **Module C4/C7**

Programming exercise

Time allowed - 15 mins at end of each lesson for 3 - 4 lessons.

To produce a simple quiz program

1) Decide on a topic for your quiz - Football, Exercise, Games?
2) THINK of a question that you want to ask about your topic.
3) DECIDE on the answer - if it is just a one word answer - OK.
   - if not then think of some wrong answers

---

eg. Question

What is yoga?	Who won the FA Cup in 1982?
Answers. It is	
1) a food made from milk	1) Liverpool
2) a system of training for mind and body	2) Man Utd
3) a sort of fruit	3) Cheltenham

Then try this part of a program

```
10  REM ** QUIZ ON ----------------**              Put in your
20  PRINT " QUESTION NUMBER 1"                     interest
30  PRINT " -----------------------"  Put in your Question
40  PRINT " ANSWERS - PICK ONE "
50  PRINT " 1----------------------" )Put in
60  PRINT " 2----------------------" )your
70  PRINT " 3----------------------" )answers
80  PRINT " PRESS 1 2 OR 3
90  INPUT A
100 IF A  =          Put in here the No of the right answer
                     THEN GOTO 130
110 PRINT "HARD LUCK IT WAS NUMBER   "
120 GOTO 140
130 PRINT "CORRECT TRY THE NEXT"
140 END
```

Worksheet 25 Module C6

Programming Exercise

Problem

Given a number of seconds produce a program to convert them into hours, minutes & seconds.
(To practice MOD, DIV, "/", INT & screen layout)

Information

Store TOTAL SECONDS in T
Store HOURS in H
Store MINUTES in M
Store SECONDS in S

Calculations

Minutes = T DIV 60
S = T MOD 60
M = MINUTES MOD 60
H = MINUTES DIV 60

Suggested Programs

1) Using MOD, DIV

```
 10 REM  CONVERTING SECONDS TO HRS,MINS,SECS
 20 PRINT "PLEASE ENTER THE TIME IN SECONDS";
 30 INPUT T
 40 LET S = T MOD 60
 50 LET M1 = T DIV 60
 60 LET M = M1 MOD 60
 70 LET H = M1 DIV 60
 80 PRINT ;T;" SECONDS IS ";H;" HOURS , ";M;" MINUTES AND ";S;" SECONDS"
 90 PRINT
100 PRINT "WOULD YOU LIKE ANOTHER GO ";
110 INPUT A$
120 IF A$="YES" THEN 20
130 END
```

2) Without using MOD, DIV

```
 10 PRINT "PLEASE ENTER THE TIME IN SECONDS";
 20 INPUT T
 30 LET M1 = INT(T/60)
 40 LET S = T - (M1*60)
 50 LET H = INT(M1/60)
 60 LET M = M1 - (H*60)
 70 PRINT  T;" SECONDS IS ";H;" HOURS, ";M;" MINUTES AND ";S;" SECONDS"
 80 PRINT
 90 PRINT "WOULD YOU LIKE ANOTHER GO ";
100 INPUT A$
110 IF A$="YES" THEN 10
120 END
```

Worksheet 26

Module C6

Program correction (debugging)

Name ....

Look at the program below; there are 15 mistakes in it.
Try to correct the obvious ones & mark in the corrections clearly.
Input the program & attempt to run it.
When you have run the program successfully, list the program & compare the listing with your corrected program and ensure that your program is correct.

```
 1 rem This program has approximately
 2 REM 15 mistakes for you to correct
 5 FOR  STUDENT = 1 to 12
10 INPUT"What is your name',NAME
20 WRITE "Hello";NAME$
30 input "How old are you",AGE
40 IF AGE$)100 THEN GO TO 800
50 LET centenary - 100-AGE$
60 print You will set a telemessage from the Queen in ";
70 PRINT centenery;" years"
80 UNTIL STUDENT = 12
90 end
```

Graphics on the BBC micro

To illustrate the range of graphic output available. Students to work in pairs using BBC WELCOME tape (or disc).
Give each pair a different program to load & run. (in addition to INTRO)
Use - SKETCH, CLOCK, MUSIC, PHOTO, KINGDOM, BIORHYTHMS, ALPHASORT

Instructions

(1) Load WELCOME from backing store and run INTRO & INDEX

(2) Watch the BBC Header at the start carefully & include it in your description.

(3) Load & run the program which has been assigned to you.
WATCH VERY CAREFULLY & list the various forms of graphic display which are used in the space below & under the headings given.

TEXT - Words - any variation in size shape? movement?

COLOUR List colours available

FLASHING WORDS/COLOURS

PICTURES. How are they produced? How do they appear?

LINKED SOUND EFFECTS

ANY OTHER EFFECTS

(4) Make a complete list of all the effects observed by the whole group.

Worksheet 28 Module C7

Graphics exercise

Input the program listed below. RUN and briefly write in the space provided what it does.

```
10  MODE 5
20  DRAW 1000,100
30  DRAW 0,1000
40  GCL 0,1
50  PLOT 85,0,0
60  PLOT 86,1000,1000
70  VDU  19,1,4,0,0,0
80  VDU  19,3,2,0,0,0
90  VDU  19,0,1,0,0,0
100 DRAW 200,0
110 DRAW 0,200
120 PLOT 86,1000,1000
130 VDU  19,1,11,0,0,0
140 VDU  19,2,12,0,0,0
150 VDU  19,0,7,0,0,0
160 VDU  19,3,5,0,0,0
170 END
```

What did it do?

Now press BREAK and start again. Type in the following and see what happens - press (RETURN) after each statement.

```
MODE 5
COLOUR 1
COLOUR 2
COLOUR 3
COLOUR 4
COLOUR 129
COLOUR 0
COLOUR 130
COLOUR 131
```

Try any other numbers you like.

Worksheet 29 Module C7

Graphics Program

Time allowed 1-2 hrs

Name ....

Input the program listed below, run it, write down in space provided what it did.

```
10   REM THIS PROGRAM
20   REM
30   INPUT "HOW MANY SECS DO YOU WANT THE PROGRAM TO RUN FOR",T
40   CLS
50   CLG
60   MODE 5
70   TIME=0
80   REPEAT
90   GCOL 0,RND(3)
100  X=RND(1000)
110  Y=RND(1000)
120  REM NOW DRAW THE SQUARE
130  MOVE X,Y
140  MOVE X,Y+50
150  PLOT 85,X+50,Y
160  PLOT 85,X+50,Y+50
170  UNTIL TIME >100* T
180  SOUND 1,-15,137,20
190  END
```

THIS PROGRAM ....
(input this statement into the REM at 10 & 20)

Amend this program so that it:-

1) will draw coloured triangles
2) uses mode 2 & all 15 colours
3) produces squares of side 100

INSERT YOUR CHANGES AT APPROPRIATE PLACES IN THE PROGRAM ABOVE.

Answer the following questions in the space provided (these could be dealt with orally)

1) Which line starts a loop? ....

2) Which line completes a loop? ....

3) What other type of loop do you know? ....

4) Which line could be left out? ....

5) Which line produces a noise? ....

6) Which line is input? ....

7) Which line is output? ....

8) What does RND(1000) produce? ....

9) What does * mean? ....

10) What do CLS & CLG mean? ....

Worksheet 30 Module C8

Modes, Colours, Graphics

Follow these instructions & record what happens in the space provided.

---

1) Type in MODE 5 & press RETURN
Now type in your name (press RETURN)

---

2) Type in the following & press RETURN
after each instruction & note what
colour was produced by that instruction.

COLOUR 0 ______________
COLOUR 1 ______________
COLOUR 2 ______________
COLOUR 3 ______________
COLOUR 128 ______________
COLOUR 129 ______________
COLOUR 130 ______________
COLOUR 131 ______________

---

3) Graphics. Type in the following
& press RETURN after each & draw
in the space what happens & state
the line colour

```
DRAW 800,800
DRAW 100,800
DRAW 100,100
```

Clear the screen & repeat but before
typing in DRAW instructions type in
GCOL 0,1 & press RETURN.

Colour ______________
Then:-

You may repeat with GCOL 0,2 &
GCOL 0,3
Record what happens

This may be used as an introduction to co-ordinates & the production of text & graphics windows. See BBC user guide p 56-61.

Graphics Programming

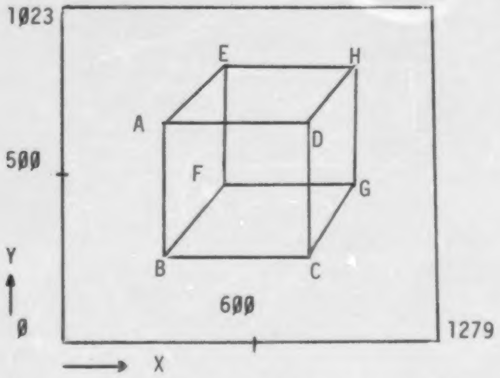
Students could be asked to write a variety of programs using the BBC User Guide for assistance. For example programs to:-

1) draw circles
2) draw human stick figures
3) ask the user what colour he/she would like the screen to be & change it to that colour
4) play a tune

As an example of the specification that may be needed there follows a program:

Program to draw a 3D representation of a cube

1) Decide upon size of cube & position in screen. The diagram below may help you.



2) Write in the co-ordinates x,y for points A to H

A B
C D
E F
G H

3) Now decide the order in which the lines are to be drawn.

(i) AB (ii) BC (iii) CD (iv) DA (v) A- (vi)
(vii) (viii) (ix) (x) (xi)

4) What colour do you want to use?

5) Now write the program, input & test it.

Project programs

PURPOSE	To produce a specified program
TIME ALLOWED	Variable, depending on difficulty of program and ability of student.
ABILITY NEEDED	A varying range of programming skills.
OBJECTIVES	The student will be able to use the programming skills which he has gained during the course to produce a well-constructed and useful program
RESOURCES	Standard hardware

PRESENTATION TO STUDENTS

i) The student will be given an appropriate program specification

ii) The necessary steps required to produce the program will be explained, i.e. planning, flowcharting, coding, inputting, testing, documenting.

iii) Student to produce working program specified, with appropriate individual guidance from teacher.

ASSESSMENT	Performance during program development. Finished program.

Project programs

Some suggested programs:

A program to convert from Farenheit to Centigrade or vice versa.

A program to play a named tune

A simple quiz program

A program to display a predesigned viewdata screen

A program to input a sentence from the user and then print it out in reverse.

A program to store a series of recipes and to display each one when requested

A program to input four numbers from the user and then print the largest.

A program to input the statistics required and then display a bar chart

A simple personality test, which questions the user and then profiles him briefly depending on the response to the questions.

(All these programs would need specifying in greater detail before being used with students).

Project 7 Section C

A computer language

PURPOSE To find out about a language

TIME ALLOWED 3 hours

ABILITY NEEDED Core programming modules taken

OBJECTIVES The student will be able to demonstrate his knowledge and skill at a language other than BASIC

RESOURCES Facilities for running the language

PRESENTATION TO STUDENTS

(i) Student to choose the language to be investigated (subject to availability of facilities)

(ii) Realistic objectives to be decided on - e.g. to investigate and produce a short report, to learn to use and produce a working program, or similar

(iii) Student to achieve task with teacher help as required

ASSESSMENT Achievement of task.

Project 8 Section C

Wages program

Time Allowed 15 mins in a series of 3-4 lessons + private study times

To produce a wages program

TASK

Produce a program which calculates the weekly wages for an employee and displays:-

1) GROSS WAGE (Hours worked x rate per hour)
2) NETT WAGE (Gross wage - Tax - NI contribution)

for a named employee

DOCUMENTATION TO BE SUBMITTED

1) Statement of purpose of program
2) A plan showing how you will tackle the program construction
3) A flow chart or some other sequence of steps to follow
4) A program listing with comment lines
5) A statement of what will appear on the screen
6) A listing of the test data used

VARYING AMOUNTS OF HELP MAY BE GIVEN

Below is a simple program which may be given as an example - less able students may be simply asked to amend it.

```
 10 REM WAGES PROGRAM
 20 PRINT "WHAT IS EMPLOYEES NAME ?"
 30 INPUT NAME$
 40 PRINT "WHAT IS THE HOURLY RATE ? £";
 50 INPUT ""A
 60 PRINT "ENTER HOURS WORKED THIS WEEK ? ";
 70 INPUT ""B
 80 LET C=A*B
 90 PRINT "GROSS PAY £";C
100 PRINT "WHAT IS TAX RATE ? 0.25,0.30"
110 PRINT D
120 LET E=(C-45)*D
130 LET F=C-E
140 LET G=F-10.52
150 PRINT "NAME : ";NAME$
160 PRINT "GROSS PAY : £";C
170 PRINT "PAY AFTER TAX : £";F
180 PRINT "TAX PAID : £";E
190 PRINT "NET WAGE (NI DEDUCTED) : £";G
```

This produces the printout on next page.

```
> RUN
WHAT IS EMPLOYEES NAME ?
? FRED SMITH
WHAT IS THE HOURLY RATE ? £2.47
ENTER HOURS WORKED THIS WEEK ? 45
GROSS PAY  £111.15
WHAT IS TAX RATE ? 0.25,0.30
20.30
NAME : FRED SMITH
GROSS PAY : £111.15
PAY AFTER TAX : £91.305
TAX PAID : £19.845
NET WAGE (NI DEDUCTED) : £80.785
```

An alternative program which may be tried is given below.

```
 10  REM ***WAGE SLIP***
 20  LET W=0
 30  LET W=W+1
 40  PRINT "PLEASE STATE YOUR NAME"
 50  INPUT M$
 60  PRINT "PLEASE STATE YOUR WORKS NUMBER"
 70  INPUT O
 80  PRINT "PLEASE STATE HOURS WORKED"
 90  INPUT H
100  PRINT "STATE PAY RATE"
110  INPUT R
120  PRINT "PLEASE STATE OVERTIME HOURS WORKED"
130  INPUT V
140  PRINT "STATE OVERTIME RATE"
150  INPUT S
160  PRINT "PLEASE STATE TAX FREE ALLOWANCE"
170  A
175  VDU 2
180  PRINT TAB(10);"WAGE SLIP"
190  PRINT TAB(10);"*********"
200  LET G=H*R
210  LET TI=G-A
220  LET T=TI*(30/100)
230  LET I=0.6*TI
240  LET P=G-(T+I)
250  PRINT "NAME ";M$
260  PRINT "WORKS NUMBER";O;TAB(15);"INCOME TAX";T
270  PRINT "NATIONAL INSURANCE";I;TAB(15);"GROSS PAY";G
280  PRINT
290  PRINT
300  PRINT
310  PRINT TAB(20);"NET PAY= ";P
315  VDU 3
320  IF W=3 THEN 340
330  GOTO 30
340  END
```

Video:

BBC Computer Programme - 'Just one thing after another' Module C3

1. General theme

Computer programs; their nature, function, and typical applications. How to write a simple BASIC program on the BBC micro.

2. Detailed breakdown

a) *A programmable washing machine*; used to illustrate that a program is a simple preset sequence of jobs.

b) Visit to a Vauxhall car production line, showing how cars are made under the control of sets of instructions which work in the same way as computer programs.

c) A manual sort, moving weights into order. Demonstration of a computerised sort.

d) The use of punched cards to drive a) a mechanical violin, b) Jacquard's looms. The binary system. Traffic light patterns seen as binary codes; cameras monitoring the London traffic flow.

e) Following instructions, testing for true and false, branching. Making mayonnaise shown as an example.

f) Programming on the BBC micro. PRINT/INPUT/RUN/ESC/LIST/IF.

g) Writing and using an educational quiz on the BBC micro.

BBC Computer Programme - 'Talking to a machine'

1. General theme

Computer languages and their use.

2. Detailed breakdown

a) Punched cards shown being used to control a steam organ; explained as an outdated form of programming.

b) Old computers in the Science museum and how they are programmed.

c) Applying the same programming principles to microcomputers. How programs to run a keyboard operate. Subroutines; analogies (firing a gun, marching soldiers, musical choruses).

d) Different types of computer languages. BASIC and its problems.

e) Specialist languages. Demonstration of using one to control a lathe.

f) Subroutines on BBC micro used to control the movements of a robot arm in the studio. IF/THEN, GOSUB.

Making the most of your micro - Getting down to BASIC

1. General theme

Simple BASIC programs, applications, and reactions to use.

2. Detailed breakdown

a) Leading cricket photographer who uses a micro system to keep a record of all his prints and orders, giving him increased efficiency. Writes his own software.

b) Simple graphics program on BBC micro. Chinese restaurant. Use of menu and interpreter to illustrate how a micro works and the three main parts of programming.

c) Use of a micro in a primary school, including flowcharting.

d) Ian writes program from students' flow chart, to ask the micro user to work out a multiplication sum and then to check the answer. Program taken further to give three chances.

e) Young pupils talk about KINGDOM program (on WELCOME tape)

f) Teachers and students explain their reactions to first operating a micro; how they overcame their fears, and what they gained. Long-term educational value.

Program Name

MINILOGO

BASIC Version

BBC BASIC

Program function

LOGO is a language developed in America to allow children to experiment with (and understand) mathematical concepts by using them to create shapes, pictures, patterns etc. on a VDU screen. MINILOGO is a language developed by a student at Glos CAT to simulate the simpler facilities of LOGO on the BBC Microcomputer.

Special features

Needs a BBC model B to run.

Available from:

Glos CAT, by means of the appended listing. This program also requires a user guide, which is too extensive to put in this document but which may be obtained from Glos CAT on application.
(Appendix A page 433)

Section D - BUSINESS APPLICATIONS

Page

This section looks at a variety of ways in which computers can be used to help in running a business.

Module D1, COMPUTERS IN BUSINESS, considers the features of computer systems which make them useful in a business environment, and introduces some of the uses to which they are put. 156

* Module D2, USING A BUSINESS PACKAGE, gives the student hands-on experience of using a business package. 158

* Module D3, WHAT IS STOCK CONTROL, introduces the use of a computer to help in stock control. 160

Module D4, STOCK CONTROL IN BUSINESS, looks at practical applications for computerised stock control in areas such as supermarkets and the clothing industry. 162

Module D5, THE CLOCK CARD, introduces the idea of clock cards and explores the development and use of a simple computer program to process clock card information. 164

Module D6, WAGES, identifies the calculations involved when paying tax on wages, and introduces a program to perform these calculations. 166

Module D7, THE PAYROLL, involves the student in an exercise to complete tax record cards and use a payroll program to process this data and obtain a printout of the result. 168

Module D8, AT THE BANK, looks at the use of computer technology in banks. 170

Module specific resources are referred to under each module description and are grouped together at the back of the section together with the following materials which may be used at the teacher's discretion.

Projects:	9	Estate Agents	197
	10	Cashpoint	198
	11	Keeping accounts	199
	12	The payroll	200
Videos:		Making the most of the micro - 'Keeping a record'	207
Programs:		VU-FILE	217

Key vocabulary of core modules is explained in the GLOSSARY 505

* denotes core modules

MODULE D1 COMPUTERS IN BUSINESS

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 4 Objectives: The student will be able to:
(ii) describe a specified number of commercial applications of computer technology
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review;revising previous material	Introductory review by either Q/A, group work or computer check-test
Applications of computing in business	How computers are used to help in the efficient running of business organisations	Extracting information from visual material	Introduce the use of the computer as a business tool - why used, since when, who by, etc. Demonstrate a variety of business uses of computers, by one or more of the following means: a)Excerpts from video, eg. Making the most of the micro 'Getting down to business' b)Slides of local or national applications Set linked tasks for students,
Relevant computer vocabulary	Why computer technology is widespread in the business world	Contributing to group discussion	Discussion to look at features of computers which make them particularly useful in business: eg. on-line and real-time systems management information systems database capabilities Illustrate by reference to case studies
			Period of practice/project

MODULE D1 COMPUTERS IN BUSINESS

Key Vocabulary	ON-LINE REAL-TIME BATCH PROCESSING DATABASE
Resources	Slide projector Appropriate slides Case study material Video playback facilities Video 'Making the most of the micro - Getting down to business' (Page 201)
Assessment	None

MODULE D2 USING A BUSINESS PACKAGE

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
(ii) use a computer keyboard to perform a simple task
Aim 2 Objectives: The student will be able to:
(iv) load a pre-written program from backing storage and use it to perform a set task
Aim 4 Objectives: The student will be able to:
(ii) describe a specified number of commercial applications of computer technology
(v) use specified computer facilities in either a commercial setting or in a model business situation

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work, or computer check-test
Vocabulary related to the application chosen	How a simple business activity involving computers is carried out; the processes involved and the skills needed	Identifying roles to be played and required tasks	Setting up model business environment within the classroom. Relating it to real life and explaining the role of the computer. Allocating student job roles and tasks, with instructional guides/worksheets 32 or 33
Relevant computer instructions	How to use a specified package as a tool	Loading a business package and successfully handling input, output and related procedures to perform a set task	Students to operate model system to perform set task, using a suitable computer package, eg. STOCK, CUSTSYS
Previous knowledge and/or experience of a business environment	How the classroom model relates to the real business situation	Contributing to group discussion	Review to evaluate performance and relevance to business concepts in group discussion, bringing in students' own work experience where possible
			Period of practice/project

MODULE D2 USING A BUSINESS PACKAGE

Key Vocabulary	PACKAGE Vocabulary relevation to application chosen - eg. LISTING, DATA PREPARATION
Resources	Program STOCK or CUSTSYS (Page 209/11) Worksheet 32 'Computers in a department store' (Page 173) Worksheet 33 'STOCK CONTROL' (Page 177)
Assessment	Observation of performance on task set in worksheet

MODULE D3 WHAT IS STOCK CONTROL?

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 2 Objectives: The student will be able to:
(iii) operate a specified microcomputer or VDU and use named facilities
(iv) load a prewritten program from backing storage and use it to perform a set task
Aim 4 Objectives: The student will be able to:
(i) describe a specified number of industrial applications of computer technology
(ii) describe a specified number of commercial applications of computer technology

(Note: this module may also be used in Section F)

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review: revising previous material	Introductory review by either Q/A, group work, or computer check-test
New vocabulary related to stock control	Need to maintain stock When to re-order How much to re-order	Preparing a shopping list Using program STOCKFILE	Introduction by reference to stock-out situation - OLD MOTHER HUBBARD Discuss the need to maintain stock - refer to stock of food at home. Use OHP to show usage of stock and need to re-order in time. Use OHP to introduce concepts of re-order point, re-order level etc.
Nature of records and files Nature of computer records	Need to keep records. Computer records different from manual records Manual records need to be changed for use on a computer	Creating a simple record	Establish the need to keep records and files. Discuss a manual record system - use OHP to illustrate a typical manual system. Establish that manual records need to be converted for use on a computer.
			Period of practice/project

MODULE D3 WHAT IS STOCK CONTROL

Key Vocabulary

- STOCK
- MAXIMUM STOCK
- MINIMUM STOCK
- RE-ORDER LEVEL
- RE-ORDER QUANTITY
- RECORD
- FILE

Resources

OHPS of	Old Mother Hubbard	(Page 181)
	Stock (with overlays)	(Page 182)
	Manual Stock File	(Page 185)
	Computer Stock File	(Page 186)
Program	STOCKFILE	(Page 212)

Assessment

Use of program STOCKFILE

Practical exercises on shopping list and record creation

MODULE D4 STOCK CONTROL IN BUSINESS

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 4 Objectives: The student will be able to:
(ii) describe a specified number of commercial applications of computer technology
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development
(ii) describe a specified number of the social implications of information technology for work, leisure or the home

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relative concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work, or computer check-test
Relevant new vocabulary. Applications for stock procedures	The need to collect data, and for it to be accurate	Examining bar codes (create and read) Examining Kimball tags etc. Watching video-taped material and completing assignment	Relating stock control concepts to retail trade Introducing the supermarket approach and the benefits achieved. Discussing the different approach in the footwear and clothing industry. Discussing the discount trading approach - use of VDU
Methods of payment	How bank card payment would operate	Re-using stock program	Discuss the possible future of direct payment by bank card
			Period of practice/project

MODULE D4 STOCK CONTROL IN BUSINESS

Key Vocabulary	DATA CAPTURE
	DATA VALIDATION
Resources	OHP of supermarket
	Kimball tags and other data collection devices
	Programs to create and read bar codes
	Video playback facilities
	Videotape 'Managing the micro - On-line' (Page 203)
Assessment	Use of BASIC programs to create and read bar codes
	Assignment with videotape (Page 204)

MODULE D5 THE CLOCK CARD

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 3 Objectives: The student will be able to:
(iv) from a specification provided, write, input, run and save a simple program involving input, processing and output
Aim 4 Objectives: The student will be able to:
(ii) describe a specified number of commercial applications of computer technology

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review: revising previous material	Introductory review, by either Q/A, group work or computer check-test
Relevant vocabulary	The function of a clock card. The need for documentation in business	Contributing to group discussion from previous experience	Discuss the use of clock cards, drawing on previous experience of students and explaining the need for documentation in business
Vocabulary. Format of a clock card	How to fill in a clock card	Completing a clock card	Explaining the clock card in terms of its function and format. Distribution of individual clock cards, and completion by the student
Relevant programming vocabulary	How to process the information on a clock card to give required output	Developing a specified program	Outlining program requirements. Students to produce simple program for processing clock card information. Running and printing the program developed (or a prewritten program may be used)
			Period of practice/project

MODULE D5 THE CLOCK CARD

Key vocabulary	PROGRAM PACKAGE DATA Consolidation of programming vocabulary from Section C	
Resources	Clock cards	(Page 191)
	Lesson Notes	(Page 189)
	Program CLOCKCARD	(Page 213)
Assessment	Accurate completion of clock card Student performance at practical programming session	

MODULE D6 WAGES

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 3 Objectives: The student will be able to:
(iii) read and amend a program
Aim 4 Objectives: The student will be able to:
(ii) describe a specified number of commercial applications of computer technology

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review: revising previous material	Introductory review by either Q/A, group work, or computer check-test
New vocabulary	The purpose of a tax code number	Extracting information from visual material	Introduce tax code number, referring to OHP transparency of program and reducing it to its essential format
Factors in wages calculation Program statements	How to work out wages due	Contributing to group discussion from previous experience	Explain the calculations involved in the tax system. Q/A to extract from students basic factors required before compilation of tax due. Converting these factors into the program shown on the OHP
Program statements and commands	How to improve the effectiveness of a program	Amending, inputting, running and printing a program	Students to amend layout by insertion of print lines, validation etc. and to input, test and print the program
			Period of practice/project

MODULE D6 WAGES

Key Vocabulary

PROGRAM

PACKAGE

Programming vocabulary from Section C

Resources

Lesson Notes (Page 193)

Program CLOCKCARD (Page 213)

Program WAGES (Page 214)

Assessment

Student performance at Q/A and practical session

MODULE D7 THE PAYROLL

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 2 Objectives: The student will be able to:
(iv) load a pre-written program from backing storage and use it to perform a set task
Aim 4 Objectives: The student will be able to:
(ii) describe a specified number of commercial applications of computer technology
(v) use specified computer facilities in either a commercial setting or in a model business situation

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work, or computer check-test
Tax information	How a payroll works	Completing formatted cards	Students to complete tax record cards (three recommended per student, with two weeks on each card)
Keyboard skills	The process of data input	Inputting data to a computer program	Students to input the data above to program PAYROLL, and to obtain printout
Payroll	The principles of working out pay, and the limitations of a microcomputer simulation	Contributing to group discussion from experience and previous knowledge	Group discussion, to decide (a) how a real payroll would operate (b) the limitations of using program WAGES to simulate this
			Period of practice/project

MODULE D7 THE PAYROLL

Key vocabulary	As for module D6	
Resources	Tax Record Card	(Page 196)
	Program PAYROLL	(Page 2215)
Assessment	Student performance at practical activities	

MODULE D8 AT THE BANK

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
(iii) recognise and distinguish between mainframe computers, minicomputers and microcomputers (in terms of relative size and characteristic uses)
Aim 2 Objectives: The student will be able to:
(iii) operate a specified microcomputer or VDU and use named facilities
Aim 4 Objectives: The student will be able to:
(ii) describe a specified number of commercial applications of computer technology
(v) use specified computer facilities in either a commercial setting or in a model business situation
Note: This module may link to other core skills areas and project work

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
Banking vocabulary	How bank accounts are operated	Contributing to class discussion from previous experience	Discuss the main functions of the clearing banks for the personal customer; illustrate by visual aids (cheques, statements, etc.) and reference to student experience
Relevant computer vocabulary	The use of computer technology to handle processing of account information	Extracting information from visual material	Introduce the main uses of computer technology in banks: a)Overnight clearing by main-frame b)Cash terminals etc. Illustrate with slides, documents and other visual material
Relevant vocabulary	How a computer program can be used to keep a bank account	Using a computer program to perform a set task	Students to use simple program to show how account balances are held and debited or credited - eg. BEEBCALC
			Period of practice/project

MODULE D8 AT THE BANK

Key vocabulary	Revision of previous vocabulary
Resources	Banking aids such as cheques, paying-in slips, etc. Visual materials, eg. slides Accounts program, eg. BEEBCALC (Page 216)
Assessment	Observation of use of accounts package

Worksheet 32 Module D2

Computers in a Department Store

ACTIVITY:	Computers in a Department Store
PURPOSE:	To illustrate a use of computers in business
TIME ALLOWED:	1 Hour
ABILITY NEEDED:	No previous knowledge. Ability to follow instructions
OBJECTIVES:	Students will be able to: i) State a use of computers in business ii) Appreciate the need for information storage in a retail system iii) Input data correctly into a computer iv) Retrieve data from computer
RESOURCES:	CUSTSYS Program loaded on computer. Worksheets Customer Account forms - blanks and some completed Customer Ledger Form
PRESENTATION TO STUDENTS:	i) Students to select roles: Accounts Assistant Receptionist Customer following brief explanation of task. Arrange groups of three students. Issue worksheet attached ii) Customer and receptionist - start filling in forms iii) Accounts assistant - inputs data from pre-prepared forms until new ones ready iv) Worksheets instructions followed v) Roles changed to provide variety of experience
ASSESSMENT:	Observation of performance Correctly completed forms
EXTENSION:	Could be linked with stock control program

Computers in a Department Store

Opening an Account

In each group select a job:

- (i) CUSTOMER
- (ii) RECEPTIONIST
- (iii) ACCOUNTS ASSISTANT - Computer Operator

(We shall change around and share jobs)

1) The receptionist greets the customer and fills in the customer account form - PUT ONE CHARACTER ONLY IN EACH SPACE

N.B. - Type of customer - this refers to how repayments are to be made:
MONTHLY
QUARTERLY
YEARLY

2) The receptionist passes the account form to the Accounts assistant.
BUT retains a record of a)NAME
b)ACCOUNT NUMBER on accounts ledger

Accounts assistant INPUTS DATA into 'CUSTSYS'

This involves a)Load CUSTSYS from disc
b)Select from menu - 'open new account'
c)Input details

3) Customers change until we have a complete set of accounts on file.

4) New roles - (i) CUSTOMER (ii) SALES ASSISTANT

a) Customer comes to assistant to buy something and charge it to their account.
Sales assistant checks account details and decides if purchase possible.

b) Customer wishes to close account - assistant deletes it.

Account Number 001

CUSTOMER ACCOUNT FORM

Customer Name THOMPSON J A

Customer Address. 18 WRIGHTAL DRIVE
ROUNDTON
WARKS

Postcode WA6R14

Type of Customer YEARLY

Credit Limit Time 24 (in months)

£5000.00

CUSTOMER ACCOUNTS LEDGER 'CUSTSYS'

Yarrods Super Store

Account No.	Name
001	J. A. Thompson
002	
003	
004	
005	
006	
007	

ACTIVITY: Stock Control and Ordering

TITLE: Stock Control and Ordering WS33

PURPOSE: To demonstrate computer use in stock control

TIME ALLOWED: 15-20 minutes for basic task - can be extended

ABILITY NEEDED: Ability to operate microcomputer and run software

OBJECTIVES: Student will be able to:

i) run a software package to create, amend and update stock files

ii) produce printed order forms using software package

iii) describe the uses of computers in stock control and purchasing

RESOURCES: Program STOCK - on either tape or disc.
Note an example of printout is attached

PRESENTATION TO STUDENTS: Worksheet (WS33) explained to students and simple tasks described on it are carried out. Each student to produce printout. Discussion on the limitations of the software and how it could be improved

EXTENSION: This could be used in the creation of a model business. Students use trade catalogues to input a substantial number of stock items and also prepare a price list for their business - recalculation of prices and VAT could be done using a simple program devised by the group. A file of orders could be produced and students given the task of updating files in the light of these and re-ordering where necessary. Sheets of new product data and changes in price or specification of old stock could be introduced and students then create new files and amend old ones appropriately

ASSESSMENT:

i) Simple task - production of order form
ii) Extension exercise provides opportunity for a wide ranging assessment

Worksheet 33

Module D2 - D4

Stock Control and Ordering

The program STOCK allows you to maintain records of stocks of items in store, to update these files and when the stock level falls below a set number you will be asked to reorder and an order form will automatically be produced.

1) Load and run STOCK - obtain the MENU

2) Display all files - press 1 and follow instructions given - if you wish to stop press F which takes you back to the Menu

3) Create a new file - press 3 and input details as requested

    Item Number - 022 - (must be 3 digits)
    Description - Protective boots
    Item Price - 8.63
    Stock Level - 50 (this is the number you have got)
    Reorder Level - 10
    Supplier - W. A. Blyth Ltd.
    Courtney Street
    SWANSEA
    Tel. - 467832

    OR USE OTHER DETAILS PROVIDED

4) Update a file - this means to change stock level if you have bought or sold stock. Press 5.

    i) Input item Number or Name - 022 or Protective Boots
    ii) Have you bought or sold stock? ANSWER Sold
    iii) Set stock level at 5 (below reorder level)
    iv) Check are you linked with a printer?
    v) How many do you want to order? Input 20

    You will now obtain an order form printed out

5) Work through the other items on the menu and note what they do

Example of Order Form Printout from STOCK

GLOUCESTERSHIRE COLLEGE OF ARTS AND TECHNOLOGY

To: Office Supplies
1 The Road
Cheltenham

Telephone: 21343

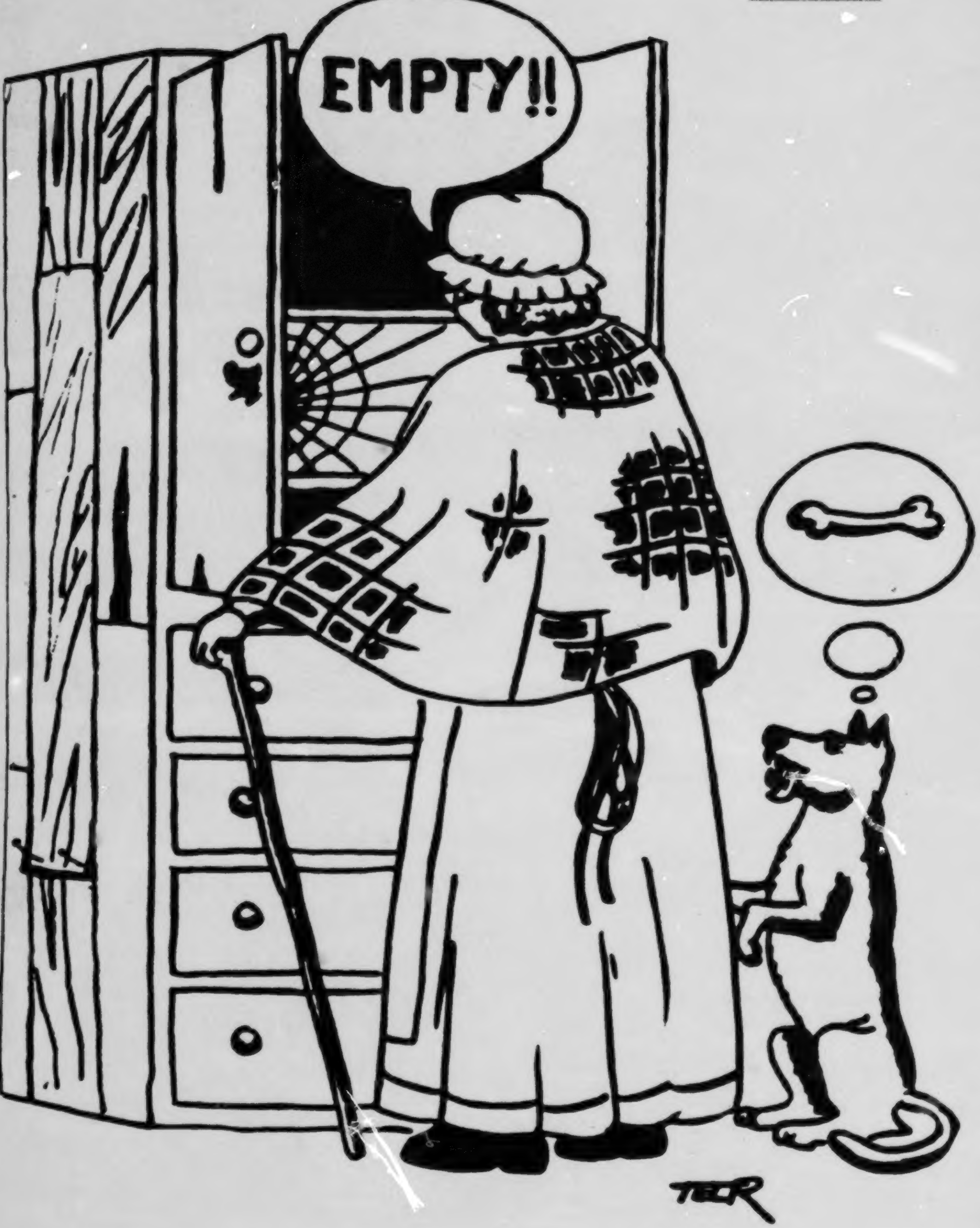
Deliver to: G.C.A.T.(Christchurch Centre
Gloucester Road
Cheltenham)

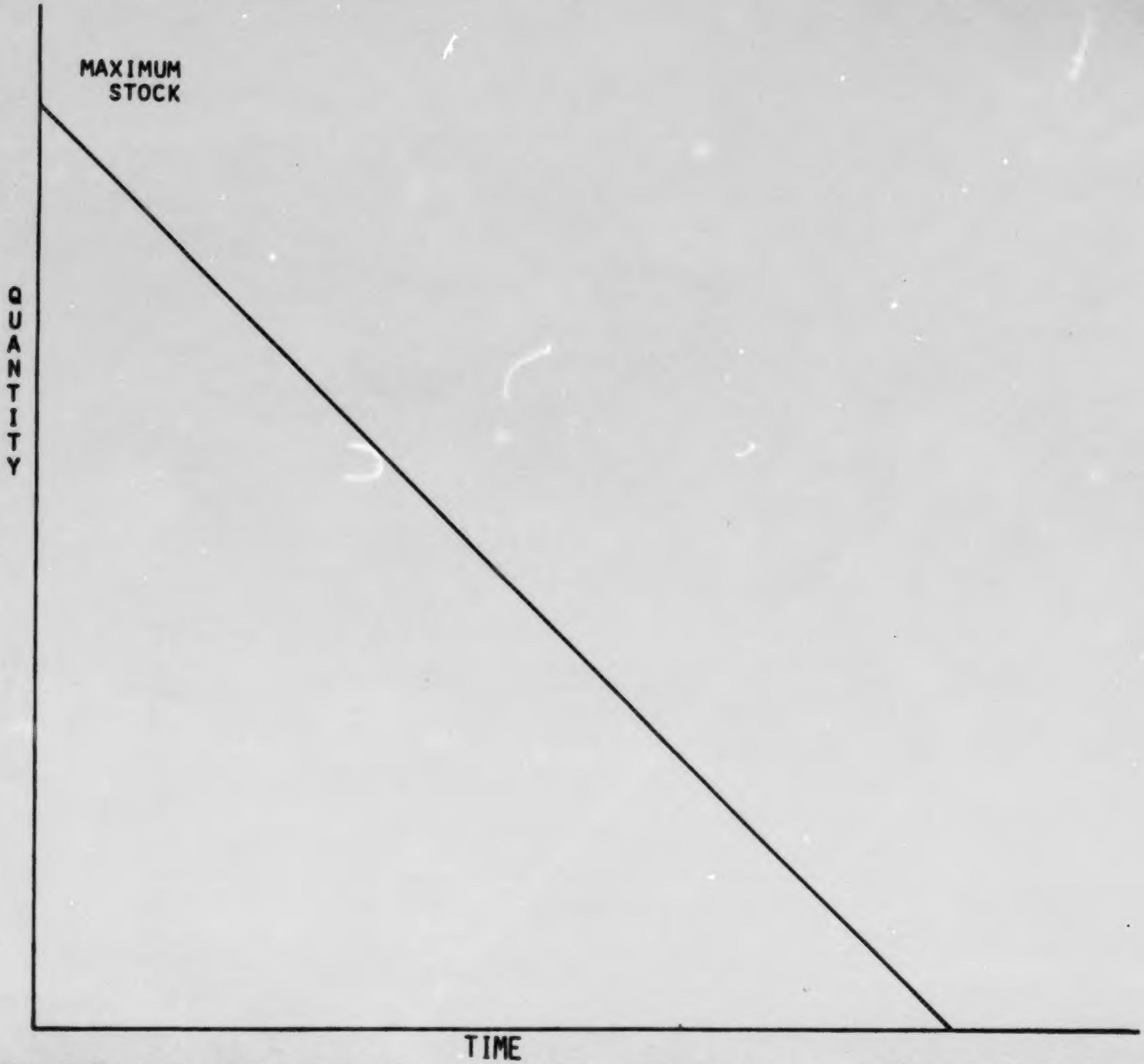
Telephone: 513134

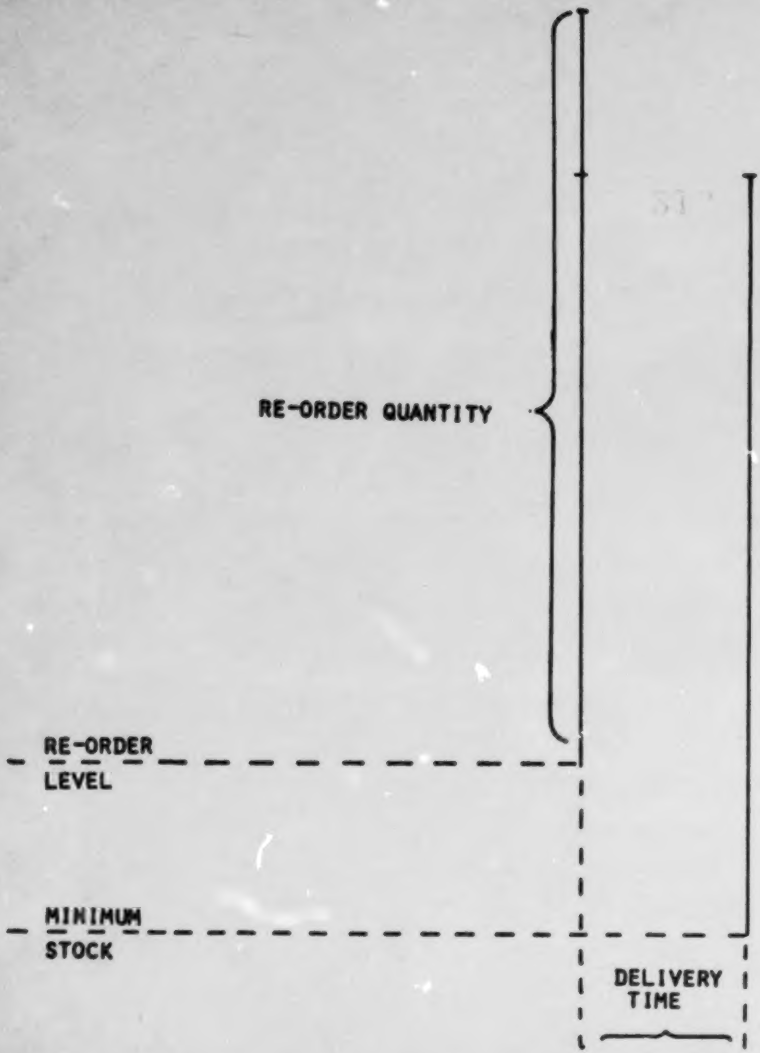
Item No.	Item Description	Quantity	Item Price	Total Price
123	Biro	800	£0.09	£72.00

Date.....................

Signed...................................


EMPTY!!
TECR


MAXIMUM
STOCK
QUANTITY
TIME


RE-ORDER QUANTITY
RE-ORDER LEVEL
MINIMUM STOCK
DELIVERY TIME

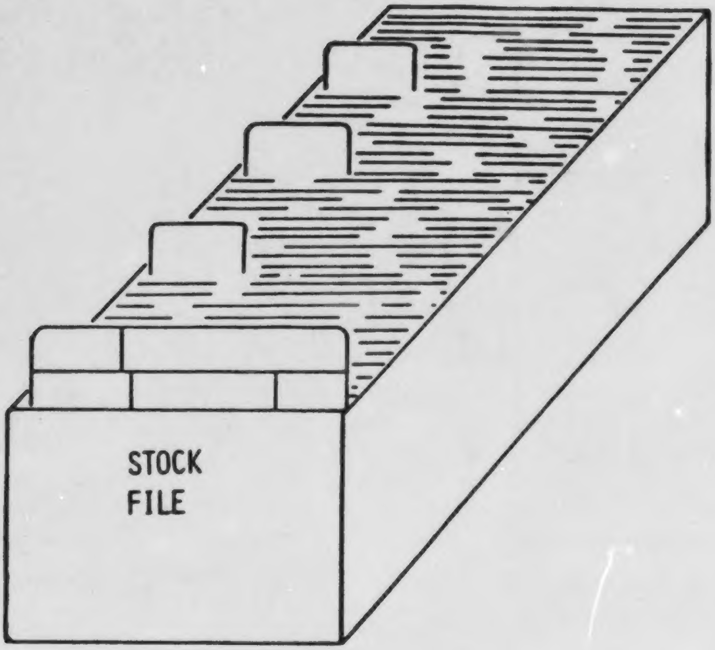
EXCESS
STOCK

BEST

213

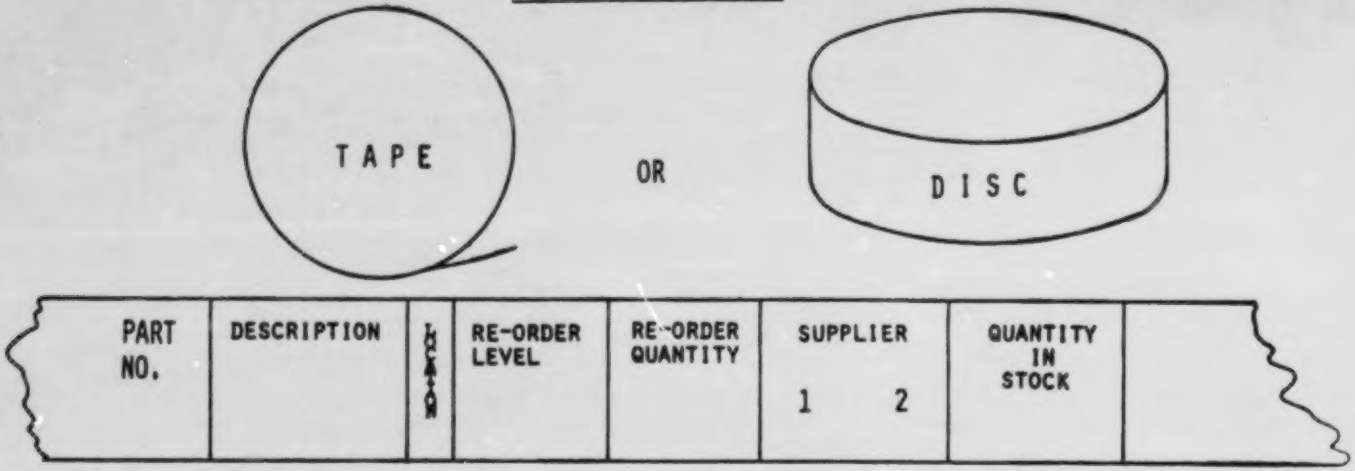
Module D3

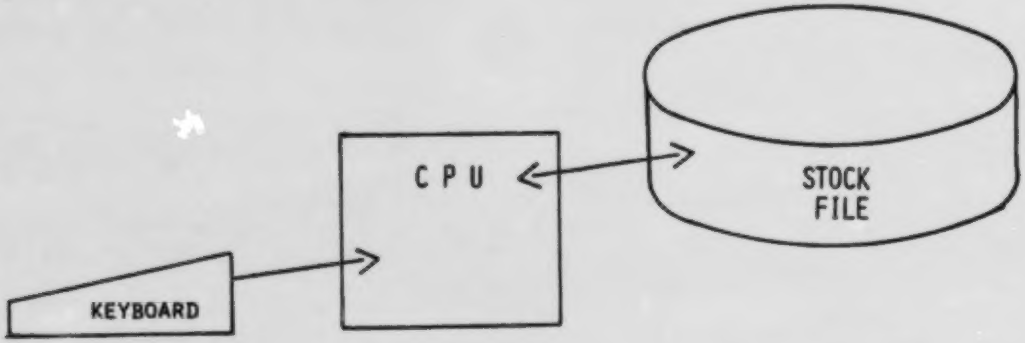
OUT OF
STOCK



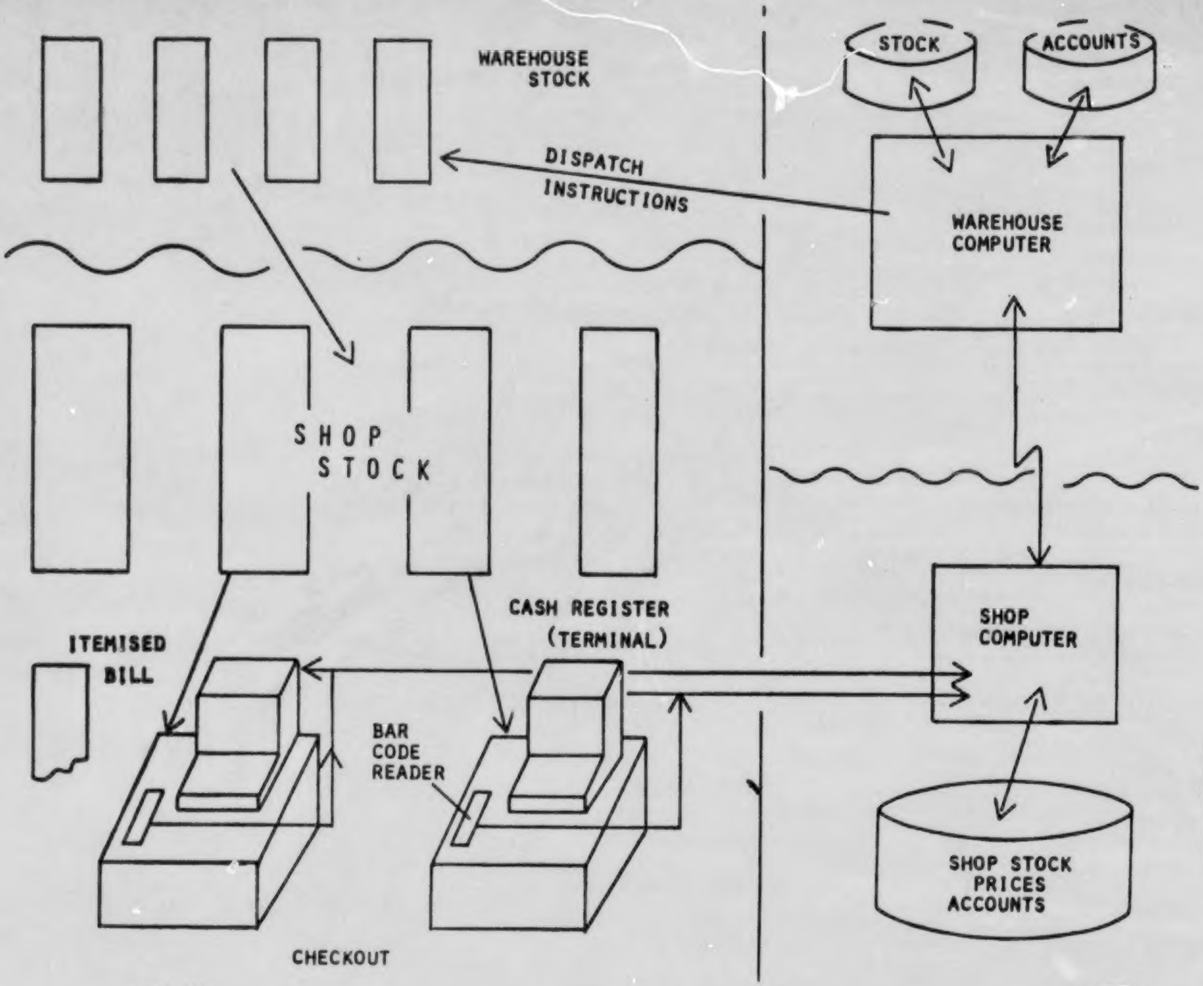
<table>
<tr><td>PART NO</td><td colspan="3">DESCRIPTION</td></tr>
<tr><td>LOCATION</td><td colspan="2">RE-ORDER LEVEL</td><td>RE-ORDER QUANTITY</td></tr>
<tr><td colspan="2">1st SUPPLIER</td><td colspan="2">2nd SUPPLIER</td></tr>
<tr><td>DATE</td><td>IN</td><td>OUT</td><td>BALANCE</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>

STOCK FILE


TAPE
OR
DISC
PART NO.
DESCRIPTION
LOCATION
RE-ORDER LEVEL
RE-ORDER QUANTITY
SUPPLIER
1
2
QUANTITY IN STOCK


CPU
STOCK FILE
KEYBOARD

FILE UPDATE


WAREHOUSE STOCK
DISPATCH INSTRUCTIONS
STOCK
ACCOUNTS
WAREHOUSE COMPUTER
SHOP STOCK
ITEMISED BILL
CASH REGISTER (TERMINAL)
BAR CODE READER
CHECKOUT
SHOP COMPUTER
SHOP STOCK PRICES ACCOUNTS

MODULE D5 'THE CLOCK CARD'

LESSON NOTES

a) It is felt important here to make reference, at an appropriate level for the student group, to the basic need for documentation in business. This can be as simple as getting a receipt for purchases at, say, 'Marks and Spencers' to control the goods return policies (M & S system is invariably recognisable by students) to the complexities of management report systems. At something less than half way in this scale could come the 'CLOCK CARD'. It has a dual documentary function of providing a record of 1) a variable (HRS) 2) a constant (rate of pay) and also operates as a source document for raw data subsequently converted by processing - manually by wages clerk or by computer - to a gross pay factor. The clock card is a familiar instrument to most students. The basic arithmetic involved is also an appropriate practical exercise.

b) From the clock card format the key transfer factors of NAME, CLOCK NO, HOURLY RATE, HOURS WORKED are identified. Further comment on the control function - eg making sure that employees are paid only for the hours at work; controlling latecoming - as may be useful for the particular student group. Noting the final function is to carry to the next stage of activity the key factors from which a 'gross pay' amount is determinable.

c) It is suggested that a hand-out is prepared of the 'CLOCK CARD'; this saves time. Guidance needed in the completion of the simplest formats is minimal. Some surveillance of inputs is necessary, at various levels, to ensure that invalid or spurious data is eliminated.

d) (It is anticipated that elementary programming skills may be present in the student groups when this module is presented. However, if this is not so the following may be seen as useful.)

The opportunity to restate the link between the basic phases of computer activity and the program is taken. The simplest form of program is described by reference to the statement words developing a model which represents the three phases: INPUT, PROCESSING and OUTPUT. Additional aspects of technique eg PRINT : PRINT are discussed and demonstrated. Extensive discussion of the difference between variable labels N$, N is needed. The pigeon-hole set up is found to be generally (ultimately) comprehensible. The LET statement, despite its redundancy in practical terms, has here been included as it is found to be a useful referant when describing the processing phase. In other words the processing follows an 'instruction word' rather than appearing to be a 'circulator type' input. Although this is what it is, using this device maintains the momentum of the concept of a 'list of instructions'.

From the above discussion points most students, in a Q and A session, can produce a workable program in time! Such will calculate and display GROSS PAY from the INPUTS.

Further sophistication may be seen to be required eg spacing to produce the final program for this module.

e) Running, proving and printing is the normal final activity. Running the program to see that it works; proving is done by the teacher running it; printing is the provision of hard copy for 1) project books 2) in this case for reference for the next module. If the print facility is not available, or expedient, a handout - gapped for personalisation - of the model program or manuscript copies of the VDU listing are essential.

CLOCK CARD

NAME: ....
DEPARTMENT: ....
CLOCK NO: ....
HOURLY RATE: ....

	TIME IN	TIME OUT	DAILY
MONDAY			
TUESDAY			
WEDNESDAY			
THURSDAY			
FRIDAY			
SATURDAY			
SUNDAY			

TOTAL HOURS ....

INSERT INTO SLOT THIS WAY OUT

CLOCK CARD

NAME: ....
CLOCK NO: ....
HOURLY RATE:...................
NO OF HOURS:...................

MODULE D6 'WAGES'

LESSON NOTES

a) Reduce OHP transparency to essential format (as below) and introduce Tax Code No. (numbers only - maximum 360).

```
 8      CLS

20      P "TYPE  IN NAME"

30      P

40      INPUT N$
```

b) Explain how tax code is calculated according to personal allowance etc and the use of this to determine tax payable. Bring in PAYE.

c) Question and answer session to extract from the students basic factors required before compilation of tax due, as follows:-

Tax Code	Write as	TC
Gross Pay	" "	GP
Tax Free Pay	" "	TFP (10 x TC/52)
Taxable Pay	" "	TP (GP - TFP)
Tax	" "	T (TP x 30/100)
National Insurance Cont	" "	NI (GP x 7.75/100)
Deductions	" "	D (T + NI)
Net Pay	" "	NP = GP - D

d) The above notes can now be converted into a program as attached.

e) Students to improve layout by insertion of print lines etc. Printouts can then be obtained as required.

LESSON NOTES:

When the program is run it will request:

Name of employee

Clock number

Weekly or monthly paid? - enter "" or "M"

This week's/month's basic pay? - normal pay for the period.

Tax code? - this must be numeric only.

Tax month/week number? - this pay period number.

Gross pay up to this date? - this is the total gross pay for the current tax year up to and including the previous pay period.

Additional pay, holiday pay etc? - extra taxable pay period paid this period ie commission, overtime, bonus, holiday pay etc.

Tax paid up to this date? - this is the total net tax deducted/refunded for the current tax year, up to and including the previous pay period. Enter minus amount for refund.

Deductions? - any other deductions after tax and NI

Number of weeks holiday pay? - if holiday pay has been included in additional pay then enter number of weeks holiday period pay paid, ie 1, 2 or e.

The following variables are used:-

N$	Name of employee
M$	for "monthly" or "weekly" calculation input
CN	clock number
TC	tax code
TG	previous total gross taxable pay to date
TT	previous total tax deducted to date
M	month or week number
B	basic pay
AP	additional pay
TF	tax free pay
OD	other deductions

Z	free pay calculation - addition to tax code
W	free pay calculation - 12 or 52 for months or weeks
P	used in free pay calculation
FP	free pay
T	taxable
TD	tax due
X	tax this week
G	gross taxable pay this week
C	used in NI calculation
D	used in NI calculation
E	employee's NI this week
H	number of weeks' holiday pay

Wages and Salaries Program

The tax and NI deductions are standard rate only - 30 per cent and 7.75 per cent respectively. They are calculated to agree with the manual tables and will probably differ from most computerized payrolls.

TAX RECORD CARD

NAME OF EMPLOYEE:

....

WEEKLY/MONTHLY PAID

TAX CODE NO:

NATIONAL INSURANCE RATE: A

	a	b	c	d	e	f	g	h	i	j
WEEK NO	WEEK/ MONTH BASIC PAY	ADDITIONAL/ HOLIDAY PAY	GROSS PAY THIS PERIOD	TOTAL GROSS PAY UP TO THIS PERIOD	TOTAL GROSS PAY INCLUDING THIS PERIOD	DEDUCTIONS			NET PAY	TOTAL TAX PAID INCLUDING THIS PERIOD
						TAX DEDUCTED OR REFUNDED THIS PERIOD	NATIONAL INSURANCE	OTHER		

COLUMNS a - e to be filled in with data which may be drawn from previous modules. This may be changed from week to week to provide variety.

COLUMNS f - j to be filled in from VDU output after the program has been run.

Project 9 Section D

Estate Agents

PURPOSE:	To investigate the use of microcomputers as an aid to Estate Agents
TIME ALLOWED:	5 hours
ABILITY NEEDED:	Knowledge of simple graphics facilities, and some experience in using them. Experience of word processing
RESOURCES:	Standard hardware. Word processing and graphics facilities
PRESENTATION TO STUDENTS:	(i) Student to investigate how estate agents function in the process of buying and selling houses (ii) Short project report to show ways in which computer could help - to be stored on word processor. Should include mention of use of graphics (iii) Sample graphics screen to be programmed showing an example of how graphics can be used to help the estate agent. Facilities such as SKETCH or LOGO may be used
ASSESSMENT:	Investigation Report Use of word processing and graphics facilities

Project 10 Section D

Cashpoint

PURPOSE: To investigate cashpoint facilities at a bank branch

TIME ALLOWED: 4 hours

ABILITY NEEDED: None

RESOURCES: Cashpoint card owner to demonstrate card use.

PRESENTATION TO STUDENTS:

(i) Outline the nature of the task, eg. to present an illustrated report on the use of a cashpoint facility at a bank.
Should contain at least:
  - a) Sketch/photograph of the customer key-in point, labelled to show functions
  - b) Labelled sketch of the cash card to be inserted in it
  - c) Instructions for customer use, and list of facilities on offer

(ii) Student to perform task; this will involve visiting the bank branch with someone who has a card. The co-operation of the bank management may also be needed, and further materials on the cashpoint facilities may be gained in this way

(iii) Student to prepare report

ASSESSMENT: Performance at investigation
Report

Keeping Accounts

When a sale is made, the following information is recorded:

Account Number	N (1-15)
Date	DI$
Invoice Number	I
Amount	A

When money is received in payment of an account the information recorded is:

Account Number	N
Date	DR$
Receipt Number	R
Amount	C

Also to be read in:

Name	NS$
Balance carried forward	B

You need not use the suggested variables.

Write a program to:

1) Input all details from data forms
2) Calculate amount now outstanding for each account
3) Check for valid Account Number
4) Print out the information using these headings:
    Account No.
    Name
    Balance C/F
    Date
    Invoice No.
    Receipt No.
    Amount
    Balance

Develop the program in the following steps:

a) Flowchart the program
b) Code the program
c) Key the code in at the VDU screen
d) Test the program
e) Print out results for 2 customers

The Payroll

PURPOSE: Using a computer to calculate a payroll

TIME ALLOWED: 6 hours

ABILITY NEEDED: This project is only suitable for students with a high level of literacy and numeracy, above-average programming skills, and some business knowledge

RESOURCES: Standard hardware and software
Template

PRESENTATION TO STUDENTS:

SITUATION

You have been involved in working on a manual payroll system called Kalamazoo

Your firm has several part-time staff who only come in for two or three days a week. Calculating the tax they have to pay is time consuming and your manager has asked if you can help by using the micro-computer

TASKS

1) Provide a worked example of the Kalamazoo system
2) Draw a flow-chart of the payroll process
3) Write a simple program for hourly paid employees from which you can calculate the basic requirements for your cashier on a week-by-week basis
4) Run the program, have it proved and obtain a print-out
5) Write a short memo to the cashier emphasising the simplicity of the program and its shortcomings. State how you arrived at the basis which you have used for the Tax and National Insurance

ASSESSMENT: Accuracy and correctness of the worked example, the flowchart and the payroll program
Presentation of memo, and understanding shown in it

Video:

Module D1

Making the most of the micro - Getting down to business

1. General theme

Small business applications of microcomputers

2. Detailed breakdown

a) Bakery manager (chain of eight outlets) using microcomputer for production control, financial planning etc.

b) Use of financial spread-sheet on BBC microcomputers; principles of operation, turnover and profit forecasting etc.

c) Small business sending out machine knitting machine; investigating and with an information retrieval package for handling enquiries, invoices, subscriptions etc., with help from a consultancy service.

d) Leading cricket photographer who uses a micro system to keep a record of all his prints and orders, giving him increased efficiency. Writes his own software

e) Advice from experts on implementation of microcomputer systems and warnings on the pitfalls

Video:

Managing the micro - 'On-line'

1. General theme

The impact of on-line data entry on selected areas of business and industry.

2. Detailed breakdown

a) The use of bar codes and readers in libraries for user identification and taking out books.

b) Supermarkets; converting old-fashioned checkout methods and manual clerical systems to new technology - bar codes and readers, laser scanning. Impact of changeover on checkouts, shelf stocking procedures, stock control, jobs.

c) British Leyland's computerised Landrover factory, with'information circuit' throughout. Clocking in via front-end micro, leading to payroll and management information system; bar codes controlling movement of pallets.

d) Car showrooms linked by Prestel-type system.

e) Centralised computer stock control for automobile parts, with telephone link to take orders.

Video - Managing the Micro 'On-line'

Linked task

This video shows how computer technology is affecting a variety of work areas.

Whilst you are watching:

1) Look out for the following words and see if you can work out their meaning

INFORMATION CIRCUIT
PAPER-DRIVEN
DATA CAPTURE
PHOTOSENSORS

2) List the different computer applications shown:

____

____

____

____

____

____

3) Look out for different sized computers and where they are being used:

Mainframe ______________________________

Minicomputer ______________________________

Microcomputer ______________________________

Afterwards discuss your results in small groups and make a composite answer.

Also WHY are computers affecting our lives more and more?

because ______________________________

____

____

____

Video - Managing the Micro 'On-line' Linked task 2

Assignment for use in conjunction with:
"STOCK CONTROL IN BUSINESS" (Module D4)
"STOCK CONTROL IN INDUSTRY" (Module F6)

1. What are machine-readable fingerprints?
    a) Tax Codes
    b) Robot Prints
    c) Bar Codes
    d) Police Codes

2. How do stores know how much they have in stock?
    a) By guessing
    b) By taking an average of what's on the shelves
    c) By manually counting what is on the shelves
    d) By counting items sold

3. One of Tesco's offices was said to be "paper driven"
What does this mean?
    a) Paper is driven round the office on trolleys
    b) Paper is shredded and used as fuel
    c) Paper drives clerical workers mad
    d) Paper is the medium of communication in the office

4. What is the most significant piece of paper in the stock control system?
    a) The delivery note
    b) The bank note
    c) The absence note
    d) The invoice note

5. Laser scanners......a new sci-fi device for reading your innermost thoughts???????Where do you find them?
    a) Star Wars
    b) Airport systems for detecting alien beings
    c) Harrods security system
    d) Tesco's checkout tills

6. What is going to happen to the job of the sales representative when the new computerised stock control system is introduced?
    a) S/he will be made redundant
    b) S/he will be selling new products
    c) S/he will become a checkout operator
    d) S/he will become deskilled and disillusioned

/Continued

7. In the British Leyland factory where are the bar codes?
    - a) On pints of beer in the canteen
    - b) On the employees overalls
    - c) On the individual stock parts
    - d) On the pallets of stock parts

8. How does the car salesperson find out that the dealer in the area has the car a customer wants?
    - a) S/he drives the customer round to each showroom
    - b) S/he gets the information from a microcomputer
    - c) S/he gets the information from a VDU linked to a remote computer

9. In one stock control system the computer "talks" to the clerk over the phone asking for various kinds of information about a stock item. How does the clerk give this data to the computer?
    - a) By talking to the computer back down the telephone line
    - b) By typing the data into a VDU linked to a remote computer
    - c) By using a keypad linked to a telephone linked to a remote computer

10. The "cashless society" is a phrase which describes a vision of the future. To what does it refer?
    - a) People will have no money due to massive unemployment caused by computers
    - b) People will return to bartering as a system of paying for goods
    - c) People will use credit cards to pay for goods directly into the computer
    - d) People will not live in consumer society but will live on the land

Making the most of your micro - Keeping a record

1. General theme

Storing information on or via a BBC micro

2. Detailed breakdown

a) Finding records in the BBC Music archives - a data base holding over 1 million records

b) How a small file handling program works for storing names and birthdays

c) Using packages for file handling/stock control; points to remember when writing this type of software. Sequential and other methods of file reading

d) Recording information about holiday traffic on the waterways, storing it on a microcomputer, using it to improve congestion and other problems

e) Using a micro to gain access to mainframe databases via telephone lines. Demonstrating a link to the USA

Program Name

STOCK

BASIC Version

BBC BASIC

Program Function

This is a simplified stock control system, intended for educational use only. It shows how a stock file can be maintained, and how stock reorder levels function.

The program contains a small built-in stock file, which holds the following details for each item of stock:

Stock number
Item description
Price
Current stock level
Reorder level
Supplier's address
Supplier's phone number

There are initially four items in stock. When the program is run, the user is given a menu showing all the options which are available. The user must then choose one of the following functions:

1) Display all files

   This will display details of all items currently in stock

2) Make an enquiry

   Individual stock items can be called up and displayed on the screen

3) Add an item of stock

   The user is able to increase the size of his stock file by adding further items

4) Amend a file

   Details of any item of stock may be changed

5) Update a file

Orders may be entered against any item of stock, or more stock may arrive

If this function is used, the current stock level will be altered appropriately. If the stock level falls below the reorder level, the user is given the option of having a reorder slip printed to send to the supplier

6) Delete an item

Any stock item may be deleted from file

7) Quit the system

This will exit from the program. Note that amendments, deletions, updates etc. are only made in memory, and so will be lost as soon as the user has exitted.

Special

All stock details are held in arrays in memory; no external files are used.

Extensive use is made of BBC graphics facilities throughout the program.

Will only run on model B BBC micro

Available from:

GlosCAT, by means of the listing appended (Appendix A page 478)

Program Name

CUSTSYS

BASIC version

BBC BASIC

Program Function

This is a very simple customer accounts program to simulate putting customers on a computer file. The following details are required for each customer entered:

Account number
Account name
Address (3 lines)
Postcode
Customer type
Credit limit time
Credit limit value

Other facilities available are to look at an account on file or delete an account.

Special features

None

Available from:

GlosCAT, by means of the listing appended (Appendix A page 441)

Program Name

STOCKFILE

BASIC Version

BBC BASIC

Program Function

This program demonstrates keeping a stock record file and the use of the re-order system. A simple stock file is set up and displayed, and the user is given the option to issue an item from stock or to receive delivery of an item. After the update, the new stock situation is shown.

Special Features

None

Available from

Glos CAT, by means of the appended listing (Appendix A page 485)
Developed by Southgate Technical College

Program Name

CLOCK CARD

BASIC Version

BBC BASIC

Program Function

This is a simple wages program which calculates a user's net pay from his clock number, tax code number, and gross pay

Special features

None

Available from:

Glos CAT - by means of appended listing. (Appendix A page 440)
Developed by Cambridge College of Further Education

Module D6

Program Name

WAGES

BASIC Version

BBC BASIC

Program Function

To perform a simple calculation of pay

Special Features

None

Available from

Glos CAT, by means of appended listing. (Appendix A page 486)
Developed by Cambridge College of Further Education.

Program Name

PAYROLL

BASIC Version

BBC BASIC

Program Function

This program inputs an employee's pay details and uses this information to calculate and print a pay slip

Special Features

None

Available from:

Glos CAT - by means of appended listing. (Appendix A page 474)
Developed by Cambridge College of Further Education

Program Name

BEEBCALC

Basic Version

BBC BASIC

Program Function

This program allows the user to set up a large spread sheet containing data, text and formulae which relate cells within the table. This is useful for a variety of functions, particularly business accounts - balance sheets, sales analysis, budgetary forecasting etc.

Special Features

None

Available from:

GEMINI MARKETING LTD.
18A Littleham Road
Exmouth
Devon
EX8 1QG

Program Name

VU-FILE

Basic Version

BBC BASIC

Program Function

VU-FILE is an information retrieval system; it allows the user to store lists or records on computer, to format the records as desired, and to retrieve them using one of several structured commands. One example of its use would be to replace a card index, storing the record details on computer to be retrieved and printed on the screen in a card format or as required.

Special Features

None

Available from:

PSION SOFTWARE LTD.
2 Huntsworth Mews
Gloucester Place
London
NW1 6DD

Section E - OFFICE APPLICATIONS

This section deals with the use of computer systems in the office; most of the material relates to word processing, but there is also a look ahead to information technology and the office of the future. Page

* Module E1, WHAT IS A WORD PROCESSOR, provides a practical introduction to word processing; hardware, software, and its role in the office. 220

* Module E2, THE ELECTRONIC OFFICE, considers ways in which information technology could affect the office of the future. 222

Modules E3 and E4, WORD PROCESSING AND FURTHER WORD PROCESSING, give students the opportunity to develop their knowledge and skills with regard to a particular word processing package, by means of a variety of practical activities. 224

Module specific resources are referred to under each module heading and are grouped at the end of the section together with the following materials which may be used at the teacher's discretion.

Projects: Ways of handling text 245

Videos: Making the most of the micro - 'Strings and things' 250

Key vocabulary of core modules is explained in the GLOSSARY 505

* denotes core modules

MODULE E1 WHAT IS A WORD PROCESSOR?

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 2 Objectives: The student will be able to:
(iii) operate a specified microcomputer or VDU and use named facilities
Aim 4 Objectives: The student will be able to:
(ii) describe a specified number of commercial applications of computer technology
(iii) use specified computer facilities in either a commercial setting or in a model business situation

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous materials	Introductory review, by either Q/A, group work or computer check-test
Word processing vocabulary	The nature of word processing and its use in an office environment	Contributing to class discussion	Introduction of word processing: what it is, and the different types of machine available. Q/A session to establish who would benefit from its introduction in an office
A word processing facility	How a particular word processor operates	Using word processing facilities on a computer to perform a set task	Demonstration of a word processor or a word processing package. Practical exercise using a word processing facility to perform set tasks, eg. worksheets 34 and 35
Relevant vocabulary	The advantages and disadvantages which the use of a word processor for handling text provides	Evaluating the experience of using a word processor	Group discussion to evaluate the experience and compare it to the use of a typewriter; list of advantages and disadvantages to be produced on blackboard
			Period of practice/project

MODULE E1 WHAT IS A WORD PROCESSOR?

Key vocabulary	WORD PROCESSOR
	EDIT
	Word processing commands relevant to task
Resources	A word processing facility such as WORDWISE, WORDY etc. (Page 253, 251)
	Worksheet 34 'Word processing for you' (WORDWISE) (Page 227)
	Worksheet 35 'Word processing exercise' (WORDY) (Page 231)
	or similar
Assessment	Performance at worksheets

MODULE E2 THE ELECTRONIC OFFICE

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 4 Objectives: The student will be able to:
(ii) describe a specified number of commercial applications of computer technology
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development
(ii) describe a specified number of social implications of information technology for work, leisure and the home

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous materials	Introductory review, by either Q/A, group work of computer check-test
Office vocabulary	How an office functions	Contributing to Q/A session	Question and answer session to establish the staff normally found in offices, and the types of job which they perform
Relevant new vocabulary. Office applications of information technology	How and why information technology can help in the performance of tasks in an office	Extracting information from visual material	Introduce and define Information Technology, and explain a variety of applications in offices for particular staff and types of job. Illustrate with excerpts from Managing the Micro 'The Human Factor', BBC Computer programme 'The new media'
Relevant vocabulary	Trends in the use of information technology in the office	Using knowledge obtained from this and previous modules to design an electronic office	Discuss the concept of the electronic office. Student exercise to design the electronic office of the future
			Period of practice/project

MODULE E2 THE ELECTRONIC OFFICE

Key vocabulary	INFORMATION TECHNOLOGY ELECTRONIC MAIL DATA COMMUNICATIONS DATA BANK DATABASE
Resources	Video playback facilities Video 'Managing the Micro - The Human Factor' (Page 246) Video 'BBC Computer programme - The new media' (Page 249)
Assessment	None

MODULE E3/E4 WORD PROCESSING/FURTHER WORD PROCESSING

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 2 Objectives: The student will be able to:
(iii) operate a specified microcomputer or VDU and use named facilities
Aim 4 Objectives: The student will be able to:
(ii) describe a specified number of commercial applications of computer technology
(iii) use specified computer facilities in either a commercial setting or in a model business situation

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous programs	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous materials	Introductory review by either Q/A, group work or computer check-test
Word processing commands	The practical use of a word processing facility	Using a word processing facility for a variety of tasks involving the input, storage and handling of text. Developing keyboard skills.	Building on word processing knowledge and skills obtained in module E1 by means of a variety of word processing exercises. Examples are given in worksheets 36-39; more may be developed, and students can also be encouraged to bring in letters/materials of their own in the later stages
			Period of practice/project

MODULE E3/E4 WORD PROCESSING/FURTHER WORD PROCESSING

Key vocabulary	Relevant word processing commands
Resources	A word processing facility Worksheet 36) Worksheet 37) Worksheet 38) word processing exercises (Page 233) Worksheet 39) or similar
Assessment	Performance at worksheets

Worksheet 34 Module E1

'Word processing for you' (WORDWISE)

ACTIVITY:	
PURPOSE:	Simple introduction to WP - illustrate use of computer in office
TIME ALLOWED:	1 hour
ABILITY NEEDED:	Knowledge of previous modules
OBJECTIVES:	Students will be able to i) State the basic principles of a word processing facility ii) State examples of its use in industry and commerce iii) Use a WP facility to produce printed copy iv) Use the correcting editing and formatting commands on a WP facility
RESOURCES:	BBC Micro with WORDWISE
PRESENTATION TO STUDENTS:	1) Link to the 'office of the future' and use of WP facilities in business 2) Students given worksheet and they work individually
ASSESSMENT:	Production of printed material Observation of performance
EXTENSION:	Can be extended to cover full range of WP facilities See other worksheets

'Word processing for you' (WORDWISE)

* Follow the instructions *

1) To obtain wordprocessing facility on BBC micro, type in

* W. (RETURN)

2) You will see

```
WORDWISE
(c) Computer Concepts 1982
Old Text? (Y/N)
```

Type in N and then ESCAPE

3) You are now ready to start. You should see:

```
Start
[-] ◄—— The cursor is in between
End
```

4) You are going to produce a simple letter of a standard type which may be produced by many businesses

TYPE IN THE FOLLOWING

DIY Products Ltd, (RETURN)
41 Cental Way, (RETURN)
Highgrove Trading Estate, (RETURN)
HIGHTOWN (RETURN)
and put in today's date--,---,1983 and (RETURN)

Homeland Stores, (RETURN)
377a, High Street, (RETURN)
EXETON, (RETURN)
Wessex (RETURN)

Dear Customer, (RETURN)

From now on try NOT to use the return key until you reach the end of your letter.

DO NOT ATTEMPT TO CORRECT ANY MISTAKES YOU MAKE. Type in:

We have recently extended our product range to meet increasing demands in the DIY market. We are pleased to send you our latest catalogue and price list. You will agree with us that this represents excellent value for money. As one of our regular customers you would, of course, be entitled to a 5% discount against all prices quoted. (RETURN)

Yours sincerely, (RETURN)

J. Smith (RETURN)

'Word processing for you' (WORDWISE)

5) Now you are ready to look at it.
Press ESCAPE. You will get the MENU; press 7 (why)

Your letter is now displayed - but it does not look quite right yet.
Don't worry about spelling mistakes yet.

6) First of all put the letter into the correct format. Here you have to use the 'Embedded commands' and they appear green on the screen.
Press ESCAPE - (if you get the MENU press it again).

7) Move the CURSOR to the start of your letter if it's not there already and press (RETURN)
(To move Cursor use ARROW KEYS (→ ↑ ← ↓))
Now insert the following embedded commands at the places stated.

i)	AT BEGINNING	Set left margin	Type f1 LM15
		Set line length	Type f1 LL50
		Fix company address	Type f1 IN30
		Insert justification	Type f1 JO
		NOW	Type f2 (this is end of commands)
ii)	BEFORE SECOND ADDRESS	Cancel indent	Type f1 CI f2
iii)	AFTER	Dear Customer Insert temporary indent	Type f1 T18 f2
iv)	BEFORE	Yours sincerely Insert temporary indent	Type f1 T125 f2
v)	AFTER	Yours sincerely Insert a space	Type f1 SP3 f2
vi)	BEFORE	J. Smith Insert temporary indent	Type f1 T135 f2

8) Now look at it again - see No.5 above.
Is it any better? Any corrections? NO, great! go to 9
YES, ah well - let's correct them

Press ESCAPE TWICE - Move the cursor to spelling mistake. Do you want to type over or insert? Check top right hand side of screen.
O means over and I - insert.
To change from one to another press f0

Carry out your corrections.

9) Now press ESCAPE and get the MENU - have a quick preview (press 7)
Everything is fine - then let's print it - Are you linked to a printer?
Press ESCAPE, get the MENU and press 6.

10) Success? You can store this letter and it can be used again and again, sending it to a variety of customers.
Store on a disc using filename LETI

Simple extension: Student could change embedded commands to produce differing formats, a simple change is to change Line Length to 15 at beginning and then view text.
This gives a newspaper-like appearance - you can now link to origins of word processing.

Worksheet 35 Module E1

Word processing exercise (WORDY)

This worksheet will enable the student to print out a prepared document which contains a number of spelling mistakes. These can then be corrected and then the final document printed.

	Enter the following	
Step 1	RUN↵	then press CAPS LOCK to clear CAPS and get into lower case
Step 2	3	press PLAY on tape recorder and when the data tape is loaded press STOP
Step 3	4	this will print out the original document
Step 4	1	this produces 'write-mode'
Step 5		Use the cursor keys → and ↓ to move along lines to correct the spelling
Step 6	ESC	this returns to the menu
Step 7	4	this will print out the corrected document

Word processing exercise (WORDY)

BEFOTE YOUR EMPLIYER LEAVES ON A BUSINESS TRIP, OBTAIN FRIM HIM CLEAR INSTEUCTIONS AS TO THE KIND OF LETTERS TO BE SEMT ON TO HIM. OPEN ALL SICH LETTERS EXCEPT THOSE MARKED 'PRIVATE'. IF YOU SEND ON THE LETTERS THEMSELVES, TAKE COPIES AS A SAFEGIARD AGAINST LOSS IN THE POST.

BEFORE YOUR EMPLOYER LEAVES ON A BUSINESS TRIP, OBTAIN FROM HIM CLEAR INSTRUCTIONS AS TO THE KIND OF LETTERS TO BE SENT ON TO HIM. OPEN ALL SUCH LETTERS EXCEPT THOSE MARKED 'PRIVATE'. IF YOU SEND ON THE LETTERS THEMSELVES, TAKE COPIES AS A SAFEGUARD AGAINST LOSS IN THE POST.

Worksheet 36 Module E3/4

Word Processing (2)

Extension of WP1 to produce standard letter to a number of customers.

Note: Letter from WP1 is stored as LETI or is still on machine. If stored, then start at 1, if still on machine start at 2

1) Go to Menu, select 1, enter filename LETI (press RETURN). Press ESCAPE and enter edit mode - your letter will be on screen with green commands visible.

2) Delete customer's address as follows:
Move cursor to start of address and press f3 - this marks start.
Move cursor to end of address and press f3 - this marks end.
Press f7 - this will delete marked text.

3) Now save this standard letter LETI as follows:
Press ESCAPE and find MENU, select I, enter filename LETI (press RETURN)

4) Remove text from edit mode as follows:
Press BREAK, then press N, then press ESCAPE
You should now see

start
-
end -- if not then --

5) Create files containing customer addresses as follows:
set LM15 (press f1 LM15 f2 (RETURN))
type in address 1
Homeland Stores (RETURN)
377A, High Street (RETURN)
EXETON (RETURN)
Wessex (RETURN)

Save address. Press ESCAPE, select 8 from MENU, enter filename ADDI (RETURN) and then press any key.

6) Move to next address as follows:
Press BREAK, N, ESCAPE - this clears screen
repeat as 5) with ADD2, ADD3, ADD4 if needed
ADD2 is
SAVEORAMA
2 Kings Way
BRIGHTON
Lorks. Create and save as in 5.

7) Obtain Menu and select 2, enter Filename LETI press ESCAPE

8) Go to place for the address (below date and after green CI command)
press f1 GF "ADD1" f2
go to Menu (press ESC) select 7 and display - OK

9) If OK, print - return to menu and select 6

10) To change address, go to MENU, select 5, press G and enter ADD1, press (RETURN) then enter ADD2, press (RETURN). Preview (7) and then print (6).

Worksheet 37 Module E3/4

Word processing exercise (WORDY)

Type a letter to fill the screen, using the following information - make sure that no red lights are showing first:

NEW LINE	Press RETURN
DELETION	Use the space bar to blank out the errors and then use the 'close-up' routine using ; to close the spaces. But, this will almost certainly entail using the # routine to insert extra spaces at the end of a line to improve the presentation. (Overtyping is simpler!)
RETURN TO MENU	Press ESCAPE
PRINTING	Option 4 on the menu will print out the document but if you have no printer there is no need to use this option

Worksheet 37 Module E3/4

Word processing exercise (WORDY)

CAMBRIDGE COLLEGE OF FURTHER EDUCATION
NEWMARKET ROAD
CAMBRIDGE
CB5 8EG

24th June 1983

Dear Colleague

You are now taking part in a Word Processing workshop using a simple program to illustrate the layout of a business letter.

Yours faithfully

Worksheet 38 Module E3/4

Word processing exercise (WORDWISE)

Step 1 Check that Wordwise is operative

Step 2 The following will be displayed on the screen in colour:

```
                    WORDWISE
          <C> Computer Concepts 1982
     Old text?  (Y/N)
```

Step 3 Type Y

Step 4 The computer is now asking for your choice from the menu. Type 2 to indicate that you want to retrieve something from disk.

Step 5 'Load new text' will now start flashing and the computer will ask for the filename that you want.

Step 6 Type DOC2 and press return.

Step 7 The computer will now search for the document. When it has found DOC2 the menu will come up again with the words 'Please enter choice'

Step 8 Press escape. You will now see the document that you are to edit appear on the screen. Make sure that there is a yellow I at the top right-hand corner of the screen: if it is not there press f0.

Step 9 In the first paragraph you will notice that the words 'the opportunity of' have been omitted from the first sentence. Do the following after checking that you are in lower case. (Press 'caps lock' key if there is a red light showing on the computer keyboard).

Step 10 Place the cursor under the 'c' of calling and type in 'the opportunity of' with no apostrophes. Don't forget the space after 'of'.

Step 11 The computer will make sure that the lines are even for you, so you need not move any words at the end of the line.

Word processing exercise (WORDWISE)

Step 12 Three alterations are now going to be made to the document:

1) changing a character
2) changing a word
3) changing the same word several times

To enable this to be done press f0 to change the yellow I at top of screen to O

Step 13 The time of appointment is to be 11 a.m. instead of 10 a.m. - to do this place the cursor under the 0 of 10 and type 1

Step 14 The day is to be Tuesday instead of Wednesday. To change this, position the cursor under the W of Wednesday and type Tuesday. Then press and hold down the CTRL key whilst tapping A twice to delete 'ay'

Step 15 'J. Smith' is to be replaced by 'A. Hardcastle'. To enable this to be done, move the cursor to the beginning of the document so that all occurrences of 'J. Smith' will be replaced.

Step 16 Press escape to get the menu again.

Step 17 Type 5 - 'Search and replace' will start to flash

Step 18 Now Type G to indicate that you want all occurrences to be changed.

Step 19 In response to 'Please enter search string' type J. Smith and press return.

Step 20 You will then be asked 'Please enter replace string' so type A. Hardcastle and press return. (The menu will be displayed)

Step 21 Pressing 7 will enable you to view the letter with the changes executed and in its final form.

Step 22 Now you can print the corrected version of the letter, if you wish. Press escape to return to the menu

Step 23 Type 6 and the letter will be printed.

Step 24 Press any key to return to menu.

Word processing exercise (WORDWISE)

Our representative, Mr. J. Smith, will be in your district next week and will take calling on you on Wednesday next at 10 a.m.

If this date is not suitable, will you please let us know when it will be convenient for you to see Mr. J. Smith.

Our representative, Mr. A. Hardcastle, will be in your district next week and will take the opportunity of calling on you on Tuesday next at 11 a.m.

If this date is not suitable, will you please let us know when it will be convenient for you to see Mr. A. Hardcastle.

Worksheet 39 Module E3/4

Word processing exercise (WORDWISE)

Step 1 Check that Wordwise is operative.

Step 2 The following will be displayed on the screen in colour:

```
                    WORDWISE
            <C> Computer Concepts 1982
    Old text?  (Y/N)
```

Step 3 Type Y

Step 4 The computer is now asking for your choice from the menu. Type 2 to indicate that you want to retrieve something from disk.

Step 5 'Load new text' will now start flashing and the computer will ask for the filename that you want.

Step 6 Type DOC3 and press return.

Step 7 The computer will now search for the document. When it has found DOC3 the menu will come up again with the words 'Please enter choice'

Step 8 Press escape. You will now see the document that you are to edit appear on the screen. Make sure that there is a yellow I at the top right-hand corner of the screen; if it is not there press f0.

Step 9 Do the following after checking that you are in lower case. (Press 'caps lock' key if there is a red light showing on the computer keyboard).

Step 10 To centre the heading position the cursor under the T of Travel.

Step 11 Now press f1, type CE and then press f2. You will notice that CE in green will appear before Travel. (Letters in green do not appear in the final document)

Step 12 To check that this will result in the centering of the heading, press escape and then 7, this will show you what the document now looks like.

Step 13 Press any key to return to the menu and then press escape.

Step 14 Now place the cursor under the P of Please and hit return twice, this will space out the heading.

Step 15 The following numbered sections must also be separated. To do this place the cursor under the number and press return twice. Repeat this for all 3 sections.

Word processing exercise (WORDWISE)

Step 16 The next part of the text consists of a table with a heading. Use the previous method to separate out the heading.

Step 17 Repeat this method to separate out the table, two items in each line.

Step 18 This table needs to be centered, so move the cursor to the beginning of any line and press f1, type CE and press f2. This will show up in green as before.

Step 19 Repeat the method of Step 18 for each of the following lines in the table. To see what this looks like, press escape and then 7.

Step 20 Press any key and then press escape to return to your original document. Now realign the table as follows: Place the cursor under 3 in second line of the table and press space bar once.

Step 21 Move the cursor to the N of Noon and press space bar once (this lines up the first column);to line up the second column, move cursor to the space before 1200 and press space bar as before until the columns are lined up. Repeat as necessary with the remainder of the table.

Step 22 To remove the commas and fullstop from the ends of the lines place the cursor under the comma and press CTRL A. Repeat as necessary.

Step 23 Now we will suppose that you want to move the details about passports to the beginning of the notes. This is done as follows:

Step 24 Move the cursor above 2 of the second section and press f3 (you will notice that a white square shows above the 2).

Step 25 Now move cursor about the 3 of the third section and press f3 again (another white square will appear).

Step 26 Move cursor to the line above 1 of the first section and press f8. The text has now moved to the right place.

Step 27 The numbers of the sections will need changing but you can do this by positioning the cursor under the character and pressing f0 to get into Overwrite and then typing the correct figure.

Step 28 To view the document with all the changes executed press escape and then type 7.

Step 29 Now the corrected document can be printed. Press any key to get back to the menu and then type 6 to print.

Step 30 Press any key to return to the menu.

Word processing exercise (WORDWISE)

TRAVEL INSTRUCTIONS
Please read the following notes carefully: 1. Departure times: we reserve the right to alter departure times. Check with your local office 24 hours before departure. 2. Passports: travellers must hold valid passports and a visa is necessary for certain countries. 3. All times are based on the 24-hour clock and in local time.
Examples of 24-hour system 12.30 a.m. 0030, 3.15 a.m. 0315, Noon 1200, 2.10 p.m. 1410, 9.20 p.m. 2120.

TRAVEL INSTRUCTIONS

Please read the following notes carefully:

1. Passports: travellers must hold valid passports and a visa is necessary for certain countries.

2. Departure times: we reserve the right to alter departure times. Check with your local office 24 hours before departure.

3. All times are based on the 24-hour clock and in local time.

Examples of 24-hour system

12.30 a.m.	0300
3.15 a.m.	0315
Noon	1200
2.10 p.m.	1410
9.20 pm.	2120

Ways of handling text

PURPOSE:	To compare the use of word processing facilities with the use of typewriters
TIME ALLOWED:	3 hours per group
ABILITY NEEDED:	Some knowledge of typewriters would be an advantage
RESOURCES:	No special resources.
PRESENTATION TO STUDENTS:	The students involved in this project will be asked to produce a set of three posters; one for standard typewriters, one for electronic typewriters, and one for word processors. The posters will stress the advantages of each kind, and will contain many illustrations. Some research by students will be needed before they can be produced
ASSESSMENT:	Investigation Content and presentation of posters

Managing the micro - 'The human factor'

1. General theme

The impact of new technology on office work and employment in general.

2. Detailed breakdown

a) Demonstration of a word-processing package on a microcomputer, showing:
   - text entry/amendment/deletion
   - printing out text
   - reformatting text width

b) Demonstration of ICL 'total information system', incorporating electronic mail, financial modelling and a database. Accessing database for telephone directory enquiries.

c) Labour troubles when Bradford City Council introduced word processing. Electronic mail in the council.

d) American advertisement for the integrated electronic office; its application in Citibank, New York.

e) Demonstration of COMET, British Leyland's electronic mail system.

f) Effects of the new technology on employment patterns:

   i) Skilled and semi-skilled workers the most affected

   ii) Consultation with unions always required

   iii) Polarisation of jobs

   iv) Management need to choose between centralisation and decentralisation

   v) Vulnerability of traditional women's jobs

'The Human Factor' Name...........................

How has employment changed?

200 years ago most people worked.......................................

100 years ago most people worked.......................................

During the last........years the growth has been in jobs in............

....

What can the "new technology" do in an office?

Word processing - what does this mean?

....

....

The introduction of computer technology in an office

The video shows what happened when Bradford City Council introduced 'word processing'

Watch for

1) What the workers felt before the introduction

2) What they felt afterwards. Two people tell you - a typist and the office manager

3) How many jobs were lost?

4) What conditions did the Unions make before agreeing to the changes?

The Office of the Future

This part is an advertising film of how a future (1981) office will work.

Would you like to work there?................

Give one reason...

....

The effect of new technology - computers on jobs

The video says 5 things about the way modern technology affects jobs.

1) The jobs most at risk. They are...................................

   ....

2) Before change...........................should be consulted

3) Jobs will tend to concentrate in 2 areas (they use the word "polarise")
   What are the two areas?

   ....

4) Managements must choose whether to work from a central headquarters or to make the different parts of the company responsible for their own activities.

5) Some people's jobs are more at risk than others.
   Whose?...

DO YOU BELIEVE THIS AND IF SO WHAT SHOULD YOU DO ABOUT IT?

Video:

BBC Computer Programme - 'The new media' Module E2

1. General theme

Communications; the role of the computer as a replacement for letters and newspapers.

2. Detailed breakdown

a) History of mail; cart, stagecoach, pony express, telegraph, phone.

b) Electronic mail. PRESTEL and its uses as a mailing service.

c) British Rail - computerisation of Waterloo station; the timetabling, progress of the trains, et.c.

d) Use of codes for computer communications. Sending messages in parallel and in series.

e) Programs for testing a new aeroplane, developed by F International staff working from terminals at home.

f) The potential of databases. French telephone directories being put on a database; demonstration.

g) German system to allow customers to shop and pay bills from home, by means of a terminal connected to shops, banks et.c.

h) The electronic office. Less paper, more computerisation. Word processing, electronic mail et.c.

i) Demonstration on BBC microcomputer; LEN function, and program to right-justify text.

Video:

Making the most of the micro - Strings and things

1. General theme

Programming and using text manipulation

2. Detailed breakdown

a) Entering manuscript to a micro via an optical character reader. Manipulation of text ready for printing; photo typesetting machine used to print out publications for marketing

b) Simple programming and string handling. Testing for palindromes

c) Word processing on the BBC micro. Editing and printing out a letter

d) Shopping; illustrating how many different procedures are required, and the need for care when programming a robot to do the same job

e) Writing a long program. 3-part analysis; structure-design-coding. Differences between good and bad programs

Program Name

WORDY

BASIC Version

BBC BASIC

Program Function

This is a simple word processing facility, allowing some of the principles of word processing to be demonstrated to students without a package such as WORDWISE. Text may be written, saved, loaded or printed

Special Features

None

Available from:

Glos CAT - by means of listing appended (Appendix A page 487)
Developed by Cambridge College of Further Education

PREPARATION OF A DATA TAPE

1. Load the program "WORDY" and then choose the first option from the menu to get into WRITE mode.

2. Make sure that no red lights show on the computer - otherwise the keyboard will behave in the same way as that of a typewriter.

3. The DELETE key should never be used, instead the cursor keys should be used and the mistakes over-typed with the correct words.

   If too many errors are made it is probably better to start again from the beginning.

   The ESCAPE key returns the program to the menu at any time.

4. Type in the original document but make sure that the RETURN key is pressed at the appropriate point at the end of each line - if this is not done parts of words will be left at the end rather than the entire word removed to the next line.

5. The document should then be saved on a data tape by using option 2 of the menu.

Program Name

Module E1

WORDWISE

BASIC Version

BBC BASIC

Program Function

WORDWISE is a word processing package specifically designed for use on the BBC. It can operate in two modes - "Menu" and "Edit". "Menu" mode provides a variety of options for handling complete text, from entering the document to saving it or printing; "Edit" mode allows typing in and altering of text, and also provides formatting options to allow specification of the layout of the final document.

Special Features

Needs Model B BBC micro with 1.0 (or higher) operating system

Available from:

Computer Concepts,
16 Wayside,
Chipperfield,
Herts.
WD4 9JJ

Section F - INDUSTRIAL APPLICATIONS

This section looks at the use of computer technology in an industrial setting. Page

* Module F1, COMPUTERS IN INDUSTRY, introduces industrial processing needs and looks at a variety of applications for computing in this context. 256

* Module F2, USING AN INDUSTRIAL TOOL, gives the student hands-on experience of a piece of software or microprocessor controlled device which could be used in a business setting. 258

Module F3, MICROELECTRONIC CONTROL, explains the principles of micro-electronic control and how these work in a practical situation. 260

Module F4, INDUSTRIAL ROBOTS, introduces and defines industrial robots, using specialised hardware such as a robot arm for a practical demonstration of their use. 262

Module F5, COMPUTER AIDED DESIGN AND MANUFACTURE, makes use of a relevant case study to explain and demonstrate the use of computer-aided design and manufacture in industry. 264

Module F6, STOCK CONTROL IN INDUSTRY, explains in a practical way how and why stock control oeprates in an industrial context. 266

Module specific resources are referred to under each module description and are grouped at the back of the section together with other materials which may be used at the teacher's discretion.

Projects:	14 Computers in industry chart	275
Videos:	Managing the micro - 'Towards the last frontier'	279
	BBC Computer Program - 'In Control'	281
	Making the most of the micro - 'Everything under control'	285

Key vocabulary of core modules is explained in the GLOSSARY. 505

* denotes core modules

MODULE F1 COMPUTERS IN INDUSTRY

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 4 Objectives: The student will be able to:
(i) describe a specified number of industrial applications of computer technology
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
New vocabulary related to industry	The nature of industrial processing	Contributing to group discussion from previous experience	Q/A session to discuss the nature of industry, industrial processes, and their information and control needs, using examples familiar to the students
Industrial applications of information technology	How information technology can help increase industrial efficiency	Extracting information from visual material	Extracts from the video series 'Managing the Micro', to show industrial applications of information technology. Students to perform linked task
Relevant vocabulary	How information technology is affecting a specific industry	Contributing to group discussion Building up a model of a particular industry	Group discussion to produce model of the use of information technology in named industry, eg. the car industry. Introduce the idea of industrial robots. Visual material such as slides may be used to illustrate
			Period of practice/project

MODULE F1 COMPUTERS IN INDUSTRY

Key vocabulary	INFORMATION TECHNOLOGY MICROPROCESSOR ROBOT CAD CAM
Resources	Video playback facility Video 'Managing the Micro - Thinking Small' (Page 277) Slides and projector
Assessment	None

MODULE F2 USING AN INDUSTRIAL TOOL

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 4 Objectives: The student will be able to:
(i) describe a specified number of industrial applications of computer technology
(iv) use a device incorporating micro-electronic control to perform a set task
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work, or computer check-test
New vocabulary related to the application	How the device/program demonstrated can be used to perform a task	Performing a set task related to an industrial use of computer technology	Demonstration of an industrial use of computers, with explanation of how the same principles might be used in an industrial setting. Student activity linked to application chosen (Suitable demonstration/activity materials include the BBC buggy and program GLASSOP) Worksheet 'Optimisation'.
An industrial application of computing	How the device/program used relates to a real industrial use of computing technology	Contributing to group discussion	Discussion to relate demonstration and activity to use in industry, with visual materials to show a similar use if possible, eg. slides, brochures etc.
			Period of practice/project

MODULE F2 USING AN INDUSTRIAL TOOL

Key vocabulary	SENSOR	
Resources	BBC Buggy	(Page 407)
	Program GLASSOP	(Page 286)
	Slides, brochures, magazines, to illustrate industrial uses	
	Worksheet 40 'Optimisation'	(Page 268)
Assessment	Performance on worksheet activity	

MODULE F3 MICRO-ELECTRONIC CONTROL

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
- (i) use a simple predefined computer vocabulary correctly, both verbally and in writing
- (iv) recognise and state the function and importance of a microprocessor
- (viii) distinguish by example, between digital and analogue devices

Aim 2 Objectives: The student will be able to:
- (v) connect and successfully operate analogue and digital devices interfaced to a microcomputer

Aim 5 Objectives: The student will be able to:
- (i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
New vocabulary related to micro-electronics	How a linked microprocessor with a program can control a device or process	Extracting information from visual material	Explain the development and importance of micro-electronic control. Illustrate with relevant excerpts from video 'Managing the Micro – Getting in on the act' to show the introduction of microprocessor controlled products into industry and commerce. Set linked task for students
An application of micro-electronic control	How to interface and program a control activity	Interfacing two devices. Programming a set control task, with help from worksheet 41	Demonstrate a use of micro-electronic control eg. program LIGHTS, with appropriate task. The programmable tank may also be used
Relevant vocabulary	How the principles learned can relate to other activities	Contributing previous knowledge to group discussion	Group discussion to make list of other examples of computer-controlled lights
			Period of practice/project

MODULE F3 MICRO-ELECTRONIC CONTROL

Key vocabulary	MICRO-ELECTRONIC CONTROL	
	ELECTRONIC	
	I/O PORT	
	SIMULATION	
Resources	Video playback facilities	
	Video 'Managing the Micro - Getting in on the act'	(Page 278)
	Program LIGHTS	(Page 287)
	BBC EXPT BOARD 1	(Page 287)
	Programmable tank	(Page 407)
	Worksheet 41 'LIGHTS'	(Page 269)
Assessment	Performance of task set using LIGHTS	

MODULE F4 INDUSTRIAL ROBOTS

(Note that this module is dependent on access to specialised hardware)

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
- (i) use a simple predefined computer vocabulary correctly, both verbally and in writing
- (iv) recognise and state the function and importance of a microprocessor
- (viii) distinguish, by example, between digital and analogue devices

Aim 2 Objectives: The student will be able to:
- (v) connect and successfully operate analogue and digital devices interfaced to a microcomputer

Aim 5 Objectives: The student will be able to:
- (i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
New vocabulary related to robotics	How robots in real life differ from the fantasy models	Contributing to group discussion	Group discussion to define robots and decide how they work and what they are used for
An industrial robot	How the robot is interfaced and programmed	Programming the robot to perform a set task successfully. Can use robot arm, BBC buggy or other hardware	Exercise involving use of a robot linked to a microprocessor/microcomputer - demonstration, followed by practical activity to perform set task, worksheet 42
Applications robotics	The abilities and limitations of this type of industrial robot	Evaluating the experience of using the robot Contributing to discussion	Group discussion to discuss (a) possible applications for robots of this type (b) advantages of their use (c) limitations on what they can do
			Period of practice/project

MODULE F4 INDUSTRIAL ROBOTS

Key vocabulary	INDUSTRIAL ROBOT	
	BINARY	
	SERVO	
	DIGITAL	
	ANALOGUE	
Resources	Robot such as Powertran Genesis 6 Axis P101 Robot	(Page 407)
	BBC Buggy	(Page 407)
	Worksheet 42 'Controlling a robot'	(Page 270)
Assessment	Observation of student performance	

MODULE F5 COMPUTER-AIDED DESIGN AND MANUFACTURE

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 4 Objectives: The student will be able to:
(i) describe a specified number of industrial applications of computer technology
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review, revising previous material	Introductory review by either Q/A, group work or computer check-test
New vocabulary related to CAD/CAM	The techniques of computer-aided design and manufacture	Contributing to discussion from knowledge gained previously	Explaining the nature of CAD/CAM and the techniques involved, relating this back to previous modules via discussion
An application of CAD/CAM	How computer-aided design and manufacture techniques are used in a particular production area	Extracting information from visual material to perform set tasks	Case study to show the application of CAD/CAM in a particular area of design and production, eg. (a) design and production of logic circuits (b) design and production of engineering components (c) design and production of graphic material Use of visual material to illustrate. Students to perform set task, including drawing a diagram of the processes involved.
			Period of practice/project

MODULE F5 COMPUTER-AIDED DESIGN AND MANUFACTURE

Key vocabulary	CAD/CAM CADMAT NUMERICAL CONTROL TOOLS LOGIC CIRCUITS
Resources	Materials relating to case study area
Assessment	None

MODULE F6 STOCK CONTROL IN INDUSTRY

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing

Aim 4 Objectives: The student will be able to:
(i) describe a specified number of industrial applications of computer technology

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
Relevant vocabulary, eg. parts list	Different types of production	Contributing to group discussion	Revise previous ideas of stock related to home and supermarket. Discuss stock in a factory - need to have stock to meet production requirements. Refer to examples, et. Sweet factory.......sugar Bakery..............flour Car factory.........sheet metal
Relevant vocabulary, eg. parts list explosion, bill of materials	The need for a different approach to stock	Exercise: students to use a group of recipes to produce a list of requirements, with worksheet 43	Distinguish 2 different types of production, Flow-line and Made-to-order. Use example of a baking session with several different recipes to illustrate calculation of TOTAL requirements. Describe how the same process applies in other fields, eg. engineering
			Period of practice/project

MODULE F6 STOCK CONTROL IN INDUSTRY

Key vocabulary	Stock control items
Resources	OHP transparencies: Cake showing "explosion" (page 272) Bill of materials for baking session (page 273) Car gear box "explosion" (teacher to adapt from any workshop manual) (If access is available to a suitable computer, a bill of materials processor may be available to demonstrate an engineering situation) Worksheet 43 'Recipes for use in stock exercise' (page 271)
Assessment	Practical exercise creating requirements list

Optimisation

"Optimisation" means doing things in the best way. Program GLASSOP is designed to help people who want to cut small pieces of glass from a larger one to do it in the best possible way.

What to do

When the program is loaded in and running, it will ask if you want instructions. Type

```
Y
```

and read the page of instructions. Then type the space bar to continue.

Put in the size of glass you will be cutting from - type

```
200
RETURN
200
RETURN
```

Then put in two pieces to cut; type

```
100
RETURN
150
RETURN

100
RETURN
150
RETURN
```

To see how those two pieces fit into the larger one, type RETURN again, and you will be shown on the screen. Type Y to have another go.

Use the program to do each of the following:

1) Fill up a sheet 1000 x 1000 with 4 smaller pieces of glass

2) Fill up a sheet 200 x 200 with 2 smaller sheets of glass

3) Fill up a sheet 800 x 800 with 5 smaller pieces

4) Fill up a sheet 500 x 700 with 6 smaller pieces, each one a different size

LIGHTS

Glos CAT PRODUCTIONS

TRAFFIC LIGHTS (Model B ONLY)

This instruction sheet is to help the user get the best possible use of the program.

The program is best used in conjunction with BBC EXPTBOARD.

This is available from Glos CAT. This unit plugs into the BBC Model B computer and consists of 5 red, 4 yellow and 5 green lights plus two switches. One of the red and green lights are used as indicators for the red and blue switches respectively. The plug fits the 'USER I/O PORT' ONLY and MUST NOT be plugged elsewhere.

To start, plug the unit into the 'USER I/O PORT' and turn ON. Four of each colour of the lights should light up. If this does not happen, turn OFF, remove the unit plug, turn it over and replace. On turning ON the lights should be lit.

Load the program under the name "LIGHTS". The program counter will count up to 'OF'. Then type RUN.

The program will start with the Glos CAT header which will be displayed for about five seconds. After this the Graphics layout will be produced on the screen followed by the first question. The user will first be asked to input a pattern of lights for the North-South (NS) lights. The options allowed are Red, Red Yellow, Yellow and Green (R/RY/Y/G). Only one pattern should be entered. The same question will be asked for the West-East (WE) lights. Anything other than the allowed patterns will cause the message "YOU HAVE MADE A MISTAKE" to be printed. This message will be held for a few seconds and the question will be repeated. The next question to be asked will be the length of time the patterns are to be displayed. The units that the program works in are seconds. Incorrect data will cause the error message to be printed and the question repeated. The user will then be asked if any more patterns are wanted. The correct answers are YES or NO (Y/N). Here again, incorrect data will result in the error message and the question repeated. If the reply was YES the pattern input questions will be repeated. If the reply was NO the chosen sequence of lights will be displayed on the screen and on the plugged in unit. A maximum of 25 patterns have been allowed for. When the sequence has finished the user will be asked if a new sequence of patterns are wanted. The correct replies are YES and NO (Y/N). A test for incorrect data is made. If the reply is YES the program will automatically be re-run. If the response is NO the program will stop and the computer returned to the user's control in MODE 7.

Worksheet 42 Module F4

ACTIVITY: Controlling a robot

PURPOSE: To demonstrate control of a robot and its potential

TIME ALLOWED: 20-30 minutes for a group

PREREQUISITE ABILITY: None

OBJECTIVES: Students will be able to:

i) state the elements of a robot control system
ii) state the potential and limitations of the use of a specified robot in an industrial setting
iii) program a specified robot to carry out particular tasks

RESOURCES:

POWERTRAN GENESIS6 AXIS P101 Robot
BBC Buggy

PRESENTATION TO STUDENTS:

i) introduce students to the equipment to be used. Explain the operational and control principles of the robot; that the microprocessor's digital signals (which are activated by the software, ie. the controlling program provided by the user) in turn activate servo motors which enable the robot to perform as an analogue device.

ii) demonstrate how a program of instructions will enable the robot to perform a simple set task, eg. the robot may be programmed to obtain three wooden blocks from fixed positions on a bench and stack them on top of one another

iii) students to be given experience, first of running this program, then of amending it

iv) students to work individually or in groups to devise and run instructions for the robot to perform a simple task

ASSESSMENT: Observation of student performance

Worksheet 43 Module F6

RECIPES FOR USE IN STOCK EXERCISE

1. FRUIT CAKE

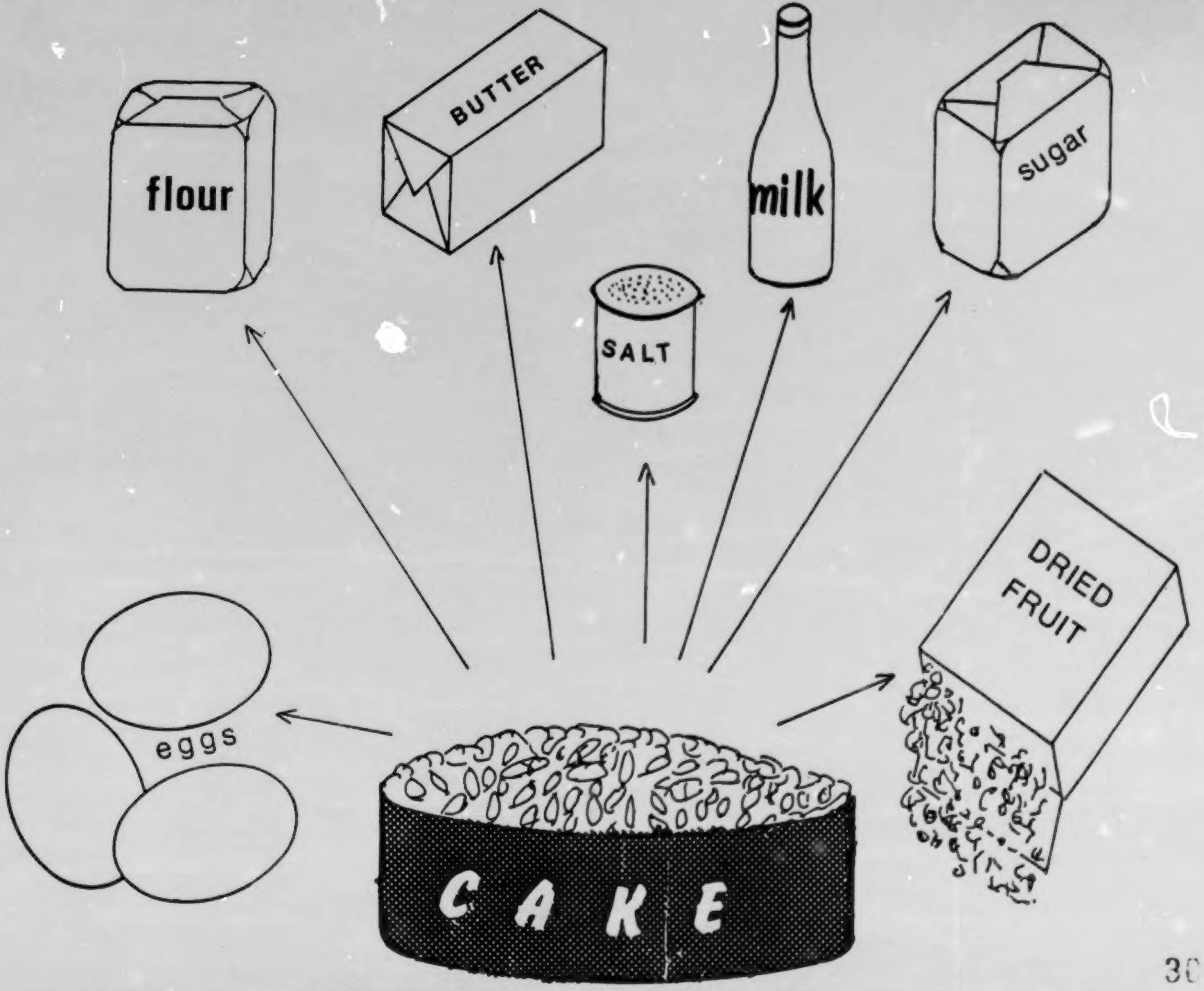
113g	butter
113g	sugar
340g	flour
226g	mixed fruit
57g	peel
57g	chopped cherries
3	eggs
	little milk

2. SCONES

226g	flour
57g	butter
57g	sugar
113g	dried fruit
1	egg
	little milk

3. FRUIT PIE

226g	flour
340g	mixed fruit
57g	butter
57g	lard
2	tablespoons cold water
	pinch salt


flour
BUTTER
SALT
milk
sugar
DRIED FRUIT
eggs
CAKE

BILL OF MATERIALS FOR BAKING SESSION

ITEM	USED IN		QUANTITY
FLOUR	CAKE		340g
	SCONES		226g
	TART		226g
		ITEM TOTAL	792g
EGGS	CAKE		3
	SCONES		1
		ITEM TOTAL	4
BUTTER	CAKE		113g
	SCONES		57g
	TART		57g
		ITEM TOTAL	227g
SUGAR	CAKE		113g
	SCONES		57g
		ITEM TOTAL	170g
DRIED FRUIT	CAKE		226g
	SCONES		113g
	TART		340g
		ITEM TOTAL	679g
PEEL	CAKE		57g
		ITEM TOTAL	57g
OTHER ITEMS	SALT		
	MILK		

PROJECT 14

Section F

Computers in Industry Chart

PURPOSE: To reinforce a knowledge of applications of Computers in Industry

TIME ALLOWED: 6 hours

ABILITY NEEDED: Basic level but ideally students should have successfully completed modules F1-F7

OBJECTIVES: The student will be able to:

i) describe a specified number of industrial applications of computer technology

ii) identify and describe a specified number of the main areas of information technology in use or under development

iii) describe a specified number of social implications of information technology for work

iv) work as a member of a team

RESOURCES: Large sheets of paper, felt tip pens, note pads
The facilities to visit a local factory

PRESENTATION TO STUDENTS:

1) State purpose to students, ie. to visit a local factory which is not computerised to view the design and production processes for a product and to identify how computer technology can be applied at each stage of the processes and to evaluate the implication of this in terms of productivity, profitability and jobs
2) Organise into groups of three
3) Visit factory and observe design and production processes for a single product

   Students to note down:

   a) Stages in the processes
   b) Number and types of people employed in the stages
   c) Time taken for completion of each stage
   d) Any obvious areas of improvement

4) In classroom each group to construct a chart in the following format:

<table>
<tr><td></td><td colspan="3">Computer Technology and ....Ltd.</td></tr>
<tr><td></td><td colspan="3">Product ....</td></tr>
<tr><td rowspan="3">DESIGN</td><td>STAGES</td><td>METHOD USED NOW</td><td>OUR SUGGESTION</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td rowspan="4">PRODUCTION</td><td></td><td></td><td></td></tr>
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Under 'OUR SUGGESTION' student to record a way of carrying out the stage using computers

5) Students as a group to then evaluate each others' suggestions in terms of costs v. benefit, implication for jobs

ASSESSMENT: Based on group performance of identifying stages, making suggestions for computerisation and the group's ability to evaluate these against the given criteria

EXTENSION: The evaluation stage could comprise a second chart. The suggestions could be made at various levels of detail

Video: Module F1

Managing the micro - 'Thinking small'

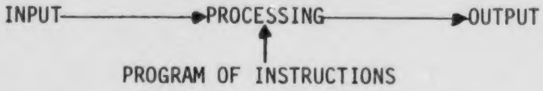
1. General theme

The nature of microprocessors, and a variety of control applications in industry.

2. Detailed breakdown

a) The use of a micro-controlled word-grading machine to replace manual grading in a woodyard

b) The nature of chips and what they can do. The role of the software engineer



c) A model conveyor belt controlled by a computer, using sensors to route bales

d) Computer control in a paper factory which makes office envelopes from scrap

e) New technology in an underwear factory; micro-controlled sewing machines

f) A micro-controlled lighting system

g) The need for new technology to check the tolerance of components being made in an engineering works

h) MAP and how it can help companies to use new technology in their businesses

Video:

Managing the micro - 'Getting in on the act'

1. General theme

The development of microprocessor-controlled products; how to introduce them into businesses

2. Detailed breakdown

a) Piano-tuning; first manually, then using a small computer model.
Feasibility study → logic flowchart → a working bread board

b) Using a micro on a bicycle to monitor mileage etc.

c) The commercial development of an electronic tape measure

d) Microcomputer-controlled greenhouses at an industrial centre - the micro used to monitor various factors and then control conditions to minimise costs. Developing software on EPROMs and marketing it

e) Development and marketing of micro-controlled measuring and control systems by a precision engineering firm; using the product to help British Rail fit new tyres. Development costs, grants and problems. The pros and cons of using masked ROMs or EPROMs

f) Micro-controlled clocking-in systems developed by a mechanical firm

g) Lengthy discussion on MAP grants and how to get them

Video:

Managing the micro - 'Towards the last frontier'

1. General theme

Implementing new technology in industry on the way to the last frontier of the fully automated factory

2. Detailed breakdown

a) Use of computer-aided design techniques to mill the pattern on biscuit moulds

b) A computer-controlled lathe

c) A flexible robot which can manipulate and match parts on an assembly line

d) Computerised factory used as a pilot scheme in implementation of the new technology, engaged in manufacture of blow-torches and oxygen-cylinder valves. After prior negotiation with union, change in working patterns and continuing implementation of new technology in all areas of the factory's work

e) Use of industrial robots for wiring harnesses on an assembly line, and for manufacture of electronic circuitry in a Japanese factory

f) Computerised testing of circuit boards for telephone answering machines

There is continuous discussion throughout the program on the impact of the new technology on men and management, unemployment and redeployment problems, the position of the unions, how to go about implementing such technology, why Britain is backward in this respect, and related subjects

BBC Computer Programme - 'In Control'

1. General theme

Microprocessor control of devices and processes

2. Detailed breakdown

a) A micro-controlled kitchen

b) Micro-mouse competition - electronic devices programmed to find their way to the middle of a strange maze, and the implications of this

c) Use of microprocessor control to switch the patterns in a digital display on and off

d) An experimental micro-controlled sewage plant. Analogue to digital conversion involved

e) Time-sharing; demonstrated by showing a waiter serving several tables in the same time slot

f) BBC program to control room temperature

g) Close-ups of the circuitry inside a microprocessor. Their method of manufacture, versatility and cost

h) The potential for use of the microprocessor in the motor car; demonstration of some control and monitoring functions already available

BBC Computer Programme 'In Control'

The theme of this programms is microprocessor control over a range of devices and processes

Before you watch

1) What is a microprocessor?
2) Think back to 'Just one thing after another', that gave examples of how machines were controlled - it started with a programmable washing machine

Give ONE example of computer control over a machine from the programme and ONE example of a machine controlled by a very different method

3) Which system (computer or other) is best, and why?

Discuss these questions and write in your group's answer below:

During the programme

1) Look out for and jot down examples of microprocessor control used now
2) Note in particular what the electronic mice can do
3) Try to remember how the following words are used and what is their meaning: DIGITAL, ANALOGUE, TIME-SHARING
4) Note how a microprocessor is made and its cost
5) Note future uses of microprocessors in controlling things

After the Program

In your group answer the following questions and write them down in the space provided

1) List as many examples of microprocessor control shown in the program as you can
2) Were the 'mice' intelligent? Can computers be intelligent? (short answer)
3) What is meant by DIGITAL, ANALOGUE, TIME-SHARING
4) a. Do you think that there will be more computer control in the future and why?
   b. Do you think there ought to be more control?

Thanks

Making the most of the micro - 'Everything under control'

1. General theme

Micro-electronic control and its applications.

2. Detailed breakdown

a) Use of computers in a B.L. sales promotion stand at a Car Show. Various flashing lights, rotating stands, slide projections, dry ice clouds and various sound effects.

b) Analogue and digital control, including bits and bytes. Demonstrating on row of lights. Conversion.

c) Robot hand for disabled people to wear, computer controlled. Nerve signals sent through pad on arm, hand makes appropriate movements

d) Temperature sensor used to switch on heater or fan depending on temperature, and how this works in terms on analogue/ digital signals, user ports, binary etc.

e) Robot using sonar to track person, distance and direction - program of instructions.
The BBC Buggy used as a teaching aid. LOGO artificial intelligence program for maze, sensors etc.

Program Name

GLASSOP

BASIC Version

BBC BASIC

Program Function

This is an optimisation program. It simulates the industrial activity of deciding on the most efficient way to lay out a variety of rectangular pieces of glass on a larger sheet - a process carried out in the glass industry, where smaller pieces are first scored and then snapped. The layout is not completely free-format, due to the need to snap glass across the entire width of the large sheet.

Instructions:

The user is first required to input the dimensions of the large piece of glass to be used, in the range 100 to 1000 units to a side. The largest dimension must be entered first, the two dimensions being separated by RETURN.

The smaller sheets of glass must then be entered, in the same range and format.

When the dimensions of a small piece of glass causes the total area of the pieces to exceed the area of the large piece, the user is given the option of retyping the last entry or running the optimisation without it. Otherwise, optimisation takes place when RETURN is typed twice after a small piece of glass has been input.

Optimisation:

BBC graphics are used to display the layout of the small pieces of glass on the large piece. Any pieces which could not be fitted in are reported on at the side of the page

Special features

Graphics

Available from:

GlosCAT, by means of appended listing (Appendix A page 456)

Program Name **Module F3**

LIGHTS

BASIC Version

BBC BASIC

Program Function

This program uses the graphics capabilities of the BBC micro to simulate the control of traffic lights. The user is asked to provide the instructions for the sequencing of traffic lights at a junction, and the effect is then shown on the graphics screen and on an attached board with lights.

Special Features

Makes extensive use of BBC graphics.
Uses the BBC EXPTBOARD to display lights.

Available from

Glos CAT, by means of listing appended. (Appendix A page 463)

Section G - OTHER APPLICATIONS

Summary Page

This section looks at the use of computers and related technology in a variety of different settings.

* Module G1, COMPUTERS IN EDUCATION, shows how Computer Aided Learning can be used to supplement more traditional classroom methods, and demonstrates this in a practical hands-on session. 290

* Module G2, USING TELETEXT/VIEWDATA, explores the use of data bank facilities such as PRESTEL to obtain information required for a particular activity. 292

Module G3, COMPUTERS IN THE HOME, looks at the spread of computers into the home, the development of the personal computer market, and the impact this is likely to have on everyday life. 294

Module G4, THE CENTRAL HEATING SYSTEM, involves the student in designing a microprocessor-controlled central heating system. 296

Module G5, MAKING DECISIONS - FORECASTING, demonstrates the use of a population forecasting program to assist in the decision-making process. 298

Module G6, USING PICTURES, introduces computer graphics and the reasons for their effectiveness. 300

Module G6, COMPUTER GRAPHICS APPLICATIONS, looks at applications of computer graphics facilities and types of graphic equipment in common use. 302

Module specific resources are referred to under each module description and are grouped at the back of the section together with the following materials which may be used at the teacher's discretion.

Projects: 15 Computer dating 307
16 A computerised house 308
17 A database 309
18 People where I live 311
19 Viewdata/teletext 313

Videos: Making the most of the micro - 'Moving pictures' 315
" " " " - 'Sounds interesting' 316
" " " " - 'At the end of the line' 317
'Computer graphics animation' 318

Key vocabulary of core modules is explained in the GLOSSARY 505

* denotes core modules

MODULE G1 COMPUTERS IN EDUCATION

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
(ii) use a computer keyboard to perform a set task
Aim 2 Objectives: The student will be able to:
(iv) load a pre-written program from backing storage and use it to perform a set task
Aim 4 Objectives: The student will be able to:
(iii) describe a specified number of applications of computer technology in areas such as education
(vi) use computer facilities relevant to an application outside commerce and industry
Aim 5.

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
Use of CAL. Relevant new vocabulary	How the use of computers to aid in the learning process can benefit both teacher and student	Contributing to discussion	Introduce the use of computers as aid to learning. Illustrate types of application, by discussion or demonstration
New vocabulary. Uses of CAL	How to run a CAL program and respond to the questions	Using a CAL program to improve knowledge and/or skills	Practical session; students to use CAL programs in areas such as literacy, numeracy etc. to improve their knowledge & skills. A number of such programs are available commercially and through the M.E.P. eg SENTENCE, FRACTS
Features of CAL	Personal reaction to use of CAL; strong and weak points of the technique as applied to individual students	Contributing the results of experiencing CAL to the group discussion	Conclusion; discussion to determine students' reactions to this form of learning aid, to draw up lists of advantages/disadvantages, and to consider whether CAL will be increasingly used in future years
			Period of practice/project

MODULE G1 COMPUTERS IN EDUCATION

Key vocabulary	CAL		
Resources	CAL programs such as	SENTENCE	(Page 320)
		FRACTS	(Page 319)
Assessment	Observation of students loading and running programs		
	Operational profile - see ASSESSMENT section (Page 372)		

MODULE G2 USING TELETEXT/VIEWDATA

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 4 Objectives: The student will be able to:
(vii) use a commercial teletext or viewdata system
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development
(ii) describe a specified number of the social implications of information technology for work, leisure and the home

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous materials	Introductory review, by either Q/A, group work or computer check-test
Teletext and viewdata systems. Applications New vocabulary	How a terminal can be linked to a commercial databank to provide access to a store of information	Contributing to group discussion. Drawing diagram of databank system	Discuss the operation of databank facilities such as teletext and viewdata systems. Describe typical applications. Introduce and demonstrate a system. Students to draw diagram of system
A use of teletext/viewdata	How to use a databank for a predefined purpose	Operating a commercial databank facility to obtain required information	Students to plan and execute a specified task involving teletext or viewdata, eg. obtaining information on methods of transport/times/costings for a particular journey
Implications of teletext/ viewdata	The costs, abilities and social implications of using databanks	Contributing to group discussion, from experience and from general knowledge	Class evaluation of the use of these facilities based on visual materials, their own experience, and teacher contribution. Discussion of costs, applications, and social implications
			Period of practice/project

MODULE G2 USING TELETEXT/VIEWDATA

Key vocabulary	TELETEXT VIEWDATA DATA BANK ACCESS ON-LINE
Resources	Access to teletext or viewdata facilities (Page 408)
Assessment	Students planning and performing set task

MODULE G3 COMPUTERS IN THE HOME

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
(iii) recognise and distinguish between mainframe computers, minicomputers and microcomputers
Aim 2 Objectives: The student will be able to:
(iii) operate a specified microcomputer or VDU and use named facilities
Aim 4 Objectives: The student will be able to:
(vi) use computer facilities relevant to an application outside commerce and industry
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review, by either Q/A, group work or computer check-test
New vocabulary Models of computer	How personal computers differ from other types	Contributing to group discussion from general knowledge	Introduce and define personal computers, by reference and demonstration (eg. Sinclair ZX81 or Spectrum). Group discussion to make list of well-known models
Applications for personal computers	How a personal computer can function as a tool in the home	Using a personal computer to perform a set task	Discuss applications of personal computing. Students to perform tasks using appropriate software eg. personal finance - BUDGET home database - TELEPHONE
Applications of information technology in the home New vocabulary	How information technology can alter the home	Contributing to group discussion	Group discussion to discover other uses of information technology in the home - communications equipment, etc.
			Period of practice/project

MODULE G3 COMPUTERS IN THE HOME

Key vocabulary	MICROCOMPUTER PACKAGE MICRO-ELECTRONIC CONTROL
Resources	Programs BUDGET (Page 321) TELEPHONE - from BBC WELCOME tape - (Page 322) Additional personal computers such as the ZX81 or Spectrum, Dragon, VIC, etc. may be used
Assessment	Observation of loading and using programs

MODULE G4 THE CENTRAL HEATING SYSTEM

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
- (i) use a simple predefined computer vocabulary correctly, both verbally and in writing
- (iv) recognise and state the function and importance of a microprocessor
- (viii) distinguish, by example, between digital and analogue devices

Aim 5 Objectives: The student will be able to:
- (i) identify and describe a specified number of the main areas of information technology in use or under development
- (ii) describe a specified number of the social implications of information technology for work, leisure and the home

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
New vocabulary Knowledge of central heating systems	How a central heating system works, and the geographical location of its different components within a building	Contributing to group discussion Drawing plan	Group discussion to evaluate students' knowledge of central heating systems and explain any points necessary. Students to prepare plan of bungalow with gas fired central heating
Micro-electronic control	How a micro-controlled central processing system operates	Redrawing plan to incorporate micro-electronic control	Explain what extra features could be introduced by means of micro-electronic control. The ideas introduced will then be incorporated into the student plans
Application details	The financial and other implications of using micro-electronic control in this way	Contributing to group discussion	Discussion to consider costs v benefits, further possible facilities, and the practicability of using such a scheme
			Period of practice/project

MODULE G4 THE CENTRAL HEATING SYSTEM

Key Vocabulary	MICRO-ELECTRONIC control
Resources	Plans/diagrams of central heating systems Trade magazines containing advertisements for control devices
Assessment	Student plans for central heating systems

MODULE G5 MAKING DECISIONS - FORECASTING

COURSE AIMS AND OBJECTIVES

Aim 1	Objectives:	The student will be able to: (i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 4	Objectives:	The student will be able to: (v) use computer facilities relevant to an application outside commerce and industry (viii) use a computer package as a tool to facilitate decision making
Aim 5	Objectives:	The student will be able to: (iii) describe a specified number of social implications of information technology for work, leisure and the home

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relative concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
Relevant vocabulary	How a computer program can carry out a simple arithmetic operation to forecast age-sex population structure of a community	Choosing birth and survivorship rates for a community (using percentages). Running forecasting program	Examine age-sex structure of community as given. Introduce concepts of birth and death rates. Select own rates and input to program (worksheet 44)
New vocabulary related to forecasting	How the program can be used to forecast the effect of changes in birth and survivorship rates and the consequent implications for provision of services, such as schools and old people's homes	Assessing output of a forecasting program and relating to decision making	Examine output of program. Identify changes in age-sex structure. Consider the implications for schools, old people's homes, employment etc.
			Period of practice/project

MODULE G5 MAKING DECISIONS - FORECASTING

Key vocabulary	PACKAGE	
	FORECASTING	
Resources	Program POP	(Page 323)
	Worksheet 44 'Making decisions'	(Page 305)
Assessment	Performance at worksheet	

MODULE G6 USING PICTURES

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 2 Objectives: The student will be able to:
(iv) load a pre-written program from backing storage and use it to perform a set task
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review, revising previous material	Introductory review, by either Q/A, group work or computer check-test
New vocabulary Applications for graphics	The effectiveness of pictures as a means of communication, and the reasons for this	Interpreting visual material. Contributing to group discussion	Comparing pictures with text as a means of communication. Examples from everyday life, eg. radio, TV. Exercise: students to interpret simple pictorial signs, eg. the Highway Code, pictures used in camping books. Group discussion to decide advantages over text
The development and nature of computer graphics. Related vocabulary	How computer graphics work	Relating programs used previously to graphics concepts	Introduce and define computer graphics, referring to recent development on micros. Relate to programs used previously
An application of graphics	The effectiveness of graphics	Loading, running and evaluating a program using graphics	Demonstrate a computer graphics program - eg. 'CLOCK' from the BBC WELCOME tape. Students to load in and run a similar program. Evaluate the effectiveness of the graphics used
			Period of practice/project

MODULE G6 USING PICTURES

Key vocabulary	GRAPHICS
Resources	Pictorial materials for interpretation exercise Graphics programs such as those on the BBC WELCOME tape available free with BBC microcomputer
Assessment	Exercise to interpret pictorial signs Loading and running program - profile (Page 372)

MODULE G7 COMPUTER GRAPHICS APPLICATIONS

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
Aim 2 Objectives: The student will be able to:
(vi) use a graphics terminal to perform a specified task
Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work, or computer check-test
New vocabulary Applications of computer graphics	The range of uses to which computer graphics can be put	Extracting information from visual material to perform a linked task	Use demonstration programs and excerpts from BBC computer programme 'Sound and pictures' to show a wide range of applications for computer graphics
Knowledge of graphics and occupational skills	The relevance of computer graphics to selected occupations	Working in a group to apply knowledge to particular situations	Students to apply their knowledge of computer graphics to a list of occupations to suggest possible applications
Graphics equipment	How to operate particular graphics equipment and what it can be used for	Using graphics equipment and contributing to evaluation in group discussion	Activity; students to widen their experience of graphics equipment and applications by using a device such as a digitiser to perform a set task. Plenary session to evaluate the usefulness of this equipment
			Period of practice/project

MODULE G7 COMPUTER GRAPHICS APPLICATIONS

Key vocabulary	GRAPHCS DIGITISER
Resources	Video playback facilities BBC Computer Programme 'Sound and pictures' (Page 314) Demonstration programmes using graphics, eg. GLASSOP (Page 286) Materials for use with digitiser
Assessment	None

Making Decisions

Look at the information given at the beginning of program POP. This shows the numbers of people in different age groups at this point in time.

Please tick the statements which you think are correct:

1. The community has more children than usual ☐
   " " " less " " " ☐
   " " " more old people than usual ☐
   " " " less " " " " ☐

2. We are now going to see what will happen in 15 years time:

   (a) For women aged 15-29 please guess how many babies they are likely to have over the next 15 years ☐ babies

   For women aged 30-44 please guess how many babies they are likely to have over the next 15 years ☐ babies

   (b) We now think about how many people in each age group will survive.
   Think about 100 people in an age group and guess how many will survive the next 15 years. Divide your guess by 100 and this will give you the survivorship rate

   Example Females aged 45-59
   If I think that 60 out of 100 will survive
   then the survivorship rate is $^{60}/100 = 0.6$

   Now complete this table of survivorship rates:

Age	Male	Female
0-14		
15-29		
30-44		
45-59		0.6

3. Now use your birth and survivorship rates as input data for program POP.

4. Record the number of males and females in each age group which the program forecasts for 15 years time.

Age	Male	Female
0-14		
15-29		
30-44		
45-59		

and the original data

Age	Male	Female
0-14		
15-29		
30-44		
45-59		

5. Tick the statements which you think are correct:

In 15 years...

The number of children has gone up ☐
" " " " " " down ☐
" " " young people has gone up ☐
" " " " " " " down ☐
" " " old people " " up ☐
" " " " " " " down ☐

We need to build more schools ☐
" " " close some " ☐
" " " find more jobs ☐
It will be easy to find a job ☐
We need to build old peoples' homes ☐
We won't need more old peoples' homes ☐

Project 15 Section G

Computer dating

PURPOSE:	To design the input for a computer dating program
TIME ALLOWED:	3½ hours
ABILITY NEEDED:	None
OBJECTIVES:	The student will design the input forms to be used by people wishing to make use of a computer dating service. This will involve consideration of the actual processing to be performed by the computer - how people will be matched up, etc.
RESOURCES:	Drawing materials
PRESENTATION TO STUDENTS:	i) Introduction to the principles of forms design, looking at examples ii) Discuss computer dating systems and how they work iii) Outlining the nature of the project iv) Student/group of students to design a suitable input form, and to decide on the principles to be used by the computer in attempting a match v) Trial run; class to fill out forms (if willing) and project team to try matching them (More able students may take this exercise further, designing/programming part or all of the actual system)
ASSESSMENT:	Design of form Group work

A computerised house

PURPOSE:	To investigate uses for home computers
TIME ALLOWED:	5 hours
ABILITY NEEDED:	Knowledge of computer abilities
OBJECTIVES:	The student will design a use for a home computer (such as the BBC computer) in the house
RESOURCES:	No special resources
PRESENTATION TO STUDENTS:	i) Discussion of different types of home computer and what they are used for ii) Students to work on the design of a particular use of a computer in the home, eg. keeping accounts, helping with children's homework iii) Students to present the design in project form. It could include the description of the use and ideas/drawings for input and output
ASSESSMENT:	Project report

Project 17 Section G

Database

PURPOSE:	To enable the students to simulate the use of a simple database in a small business situation
TIME ALLOWED:	4 hours minimum
ABILITY:	Any
OBJECTIVES:	The student will be able to: Use specified computer facilities in either a commercial setting or in a model business situation
RESOURCES:	1) Software VU-FILE (BBC) or any other Database package 2) Newspapers containing Estate Agents' advertisements or Travel Brochures
PRESENTATION TO STUDENT:	1) Organise with groups of 3 2) Each group to be given source material as in 2) above 3) Each group to select: Either 30 House descriptions and Prices or 30 Holiday descriptions and Prices 4) Each group to enter data on to VU-FILE 5) Entire group then role plays the action of an Estate Agent or Travel Agent with the group of 3 representing the Agent and the rest of the group acting as customers enquiring about different types of houses/holidays
ASSESSMENT:	Based on observation of technical and social performance of Agents' group in response to enquiries

People where I live

PURPOSE To reinforce the decision making using a computer and to relate this directly to the local community

TIME ALLOWED: 4 hours minimum

ABILITY: More suitable to higher abilities
Good numeracy skills are necessary

OBJECTIVES: Students will be able to:

i) Use a computer package to facilitate decision making

ii) Relate this to decision making in the local community of the students

RESOURCES:

1. Small area census data at Ward level obtainable from Local Authority Planning Department
2. Program POP

PRESENTATION TO STUDENT: Prior to the session the teacher needs to identify Small Area Census Data - Age, Sex, Population Structure for a Ward which relates closely to the student's home or 'work' place

1. Give tabulation to students in groups of 3. Assist students with converting data from its form on Census Tabulation to form suitable for input to program POP

ie

Age	Male	Female
0 - 14		
15 - 29		
30 - 44		
45 - 59		
60 - 74		

Different groups could be given different Wards

2. Group to discuss and record their knowledge of the facilities in the Ward such as schools, shops, social centres, factories, old peoples homes etc

3. Group to identify major characteristics of Ward from age-sex structure

4. Group to estimate survivorship and birth rates and forecast population 15 years hance as in worksheet

5. Group to discuss and record implication of the forecasted data for facility provision 15 years hence

6. Group to discuss and record limitations of this type of computer forecasting (Hint: Age grouping - definition Relevance of spatial disaggregation Estimation of birth and survivorship rates)

ASSESSMENT: Worksheet +

Recording of discussion (questions 2, 5, 6)

Project 19 Section G

Viewdata/Teletext

PURPOSE:	To increase the student's knowledge of databank facilities.
TIME ALLOWED:	4 hours
ABILITY NEEDED:	Module on teletext/viewdata systems
OBJECTIVES:	The student will be able to describe viewdata/teletext facilities and design a screen layout.
RESOURCES:	Graphics software
PRESENTATION TO STUDENTS:	i) The student will choose a particular viewdata/teletext system (PRESTEL, ORACLE, CEEFAX, etc.) and investigate it. A visit to a TV shop or similar may be used to obtain leaflets ii) The student will use graphics facilities in BASIC or another language to simulate a relevant screen design iii) The results of the investigation and screen design will be presented to the other students in the class
ASSESSMENT	Investigation Screen simulation Presentation

Video:

BBC Computer Programme - 'Sound and pictures'

1. General theme

Computer graphics, sound and voice recognition

2. Detailed breakdown

a) Projector throwing image of the night sky onto the roof of the London Planetarium, used to show how a computer uses graphics in lighting up spots on a screen

b) Examples of computer graphics (taken from the Horizon programme on computer graphics)

c) How pictures are displayed on a VDU screen. Graphics tablets. Knitting patterns analogous to programs

d) The development of computer graphics facilities to show parallel lines for bus timetabling

e) Using graphics to produce graphs on the VDU screen from numbers - demonstration on BBC micro

f) Computer speech and voice recognition. SPEAK'N'SPELL. Program on BBC micro to recognise spoken words

g) Use of computers to control musical output - computerised instruments, use of memory, use in studios

Making the most of the micro - Moving pictures

1. General theme

Computer graphics and applications of their use

2. Detailed breakdown

a) Use of computer graphics in films, "TRON", and a demonstration U.S. graphics film

b) Animation programs demonstrated on the BBC micro, including techniques of getting from one picture to another

c) Alternative methods of graphic input, including a digitiser and a video-camera

d) Computer-aided design - architectural design on APPLE

e) CAD at Clark's shoes factory. Graphic tablets for input; once design is stored, can be viewed, printed, created in different sizes

f) Three-dimensional shape rotation on BBC micro, and how it works

Making the most of the micro - Sounds interesting

1. General theme

Use of microcomputer sound facilities, and the application of sound in artificial intelligence

a) Use of computers in a modern recording Studio to produce many different types of sound

b) Explanation of BBC SOUND command and its limitations. Shows use of BBC ENVELOPE command to improve on the basic SOUND command

c) Use of small micro (APPLE) as a synthesiser, using a piano keyboard for entry of data rather than typewriter keyboard. The program also allows sheet music to be printed out and then edited

d) Use and explanation about the BBC speech synthesised chip and its uses and applications

e) Use of different languages for specific tasks, such as artificial intelligence. ROBOT arm being controlled by voice commands and storing movements for use later on

Video:

Making the most of the micro - At the end of the line

1. General theme

New developments in communications technology involving microcomputers

2. Detailed breakdown

a) American businessman in London with office in San Francisco: to beat timelag, has Apple to communicate with their mainframe over phone lines, information can be stored/retrieved at both ends

b) ECONET being used to link BBC micros and allow them to share equipment. Telephone communications between micros

c) Pharmaceutical wholesalers with central mainframe being accessed by chemist to order stock via his on-line micro

d) Demonstration of using PRESTEL to book airline seats and theatre tickets. Using MICRONET 800 to down-load programs on to micros, CEEFAX performing similar function

Making the most of the micro - Computer graphics animation

1. General theme

The programming and application of computer graphics

2. Detailed breakdown

a) Computers used in plastic surgery to get a three-dimensional view of a head to view it before the operation and see how the changes will look

b) ASCII codes and defining your own characters

c) How to program a man running across the screen

d) High resolution and low resolution graphics. Graphics instructions on the BBC micro

e) Colour graphics used to illustrate company sales figures etc. Using a graphics tablet for drawing. Bar charts

Program Name

FRACTS, MULT, TABLE, FUNNYMAN, SPELL (EARLY LEARNING)

BASIC Version

BBC BASIC

Program Function

These programs together make up the CAL package "Early Learning"

FRACTS - involves learning about fractions, with a test after each section

MULT - long multiplication teaching and testing

TABLE - tables tester

FUNNYMAN - simple hangman

SPELL - Literacy testing; adding an 'e' to a word to see if a proper word is formed

Special Features

None

Available from:

BBCSOFT

Program Name

SENTENCE, PROVERB, RHYMES

BASIC Version

BBC BASIC

Program Function

These three programs form the package 'Word sequencing' and are intended as aids to literacy. They involve sorting out jumbled words into correctly ordered sentences. SENTENCE uses ordinary sentences, PROVERB uses proverbs, and RHYMES uses nursery rhymes.

Special features

Cursor control

Available from:

Acornsoft Ltd.,
4a Market Hill,
Cambridge,
CB2 3NJ

Program Name

BUDGET

BASIC version

BBC BASIC

Program function

This is a budget analysis program. The user enters the amount of money earned, broken down under different heads of expenditure, and a budget analysis is then printed on the VDU screen in histogram form.

Special features

None

Available from:

GlosCAT - by means of listing appended (Appendix A page 436)

Program Name

TELEPHONE

BASIC Version

BBC BASIC

Program Function

This program allows the user to create and maintain a mini database of names and telephone numbers; the information can then be enquired on in a number of ways

Special features

The program as provided does not save the information on backing store, although a simple amendment will allow this to be done

Available from:

Supplied free on the WELCOME tape with the BBC microcomputer

Program Name

POP

BASIC version

BBC BASIC

Program function

Population Forecasting

Allows the user to input birth and survivorship rates for 15 year periods for a population of a hypothetical community whose age-sex structure is given in 15 year age groups.

The program then applies these rates to the present population structure and calculates the forecasted population for 15 years' time.

The user should give these rates in the form of decimals, eg. Birth rate for women in 15-29 year age group = .4 indicates that the average woman will produce 4 children in a 15 year period. A survivorship rate 0.9 indicates that 9 out of 10 people in that age group will survive the ten year period.

Special features

None

Available from:

GlosCAT - by means of appended listing (Appendix A page 477)

Section H - SOCIAL IMPLICATIONS

Page

The modules in this section encourage students to look at developments in computing and in information technology in general in their wider context as part of society; to consider the effects, good and bad, both now and in the future, and to look specifically at how this relates to their own job prospects.

* Module H1, THE INFORMATION TECHNOLOGY WORLD, defines information and looks at specific applications for it. 326

* Module H2, INFORMATION TECHNOLOGY IN SOCIETY, looks at a variety of the social effects of the technology and what they mean for the student. 328

* Module H3, THE WORLD OF WORK, considers how computer technology relates to the world of work and the student's own job aspirations. 330

Module specific resources are referred to under each module heading and grouped at the back of the section together with the following materials which may be used at the teacher's discretion.

Projects: 20 Attitudes 333
21 A computer job 334

Key vocabulary of core modules explained in the GLOSSARY 505

* denotes core modules

MODULE H1 THE INFORMATION TECHNOLOGY WORLD

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing

Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
Previous vocabulary Applications areas	What information technology is and the ways in which it is being used	Contributing previous knowledge to group discussion Extracting information from visual material to perform a linked task	Group discussion of information technology and how it differs from computer technology. Students to work in groups to assess applications, from i) previous sessions ii) visual materials, eg. excerpts from BBC television programmes 'Things to come', 'Let's pretend'
Previous vocabulary	The nature of particular areas of information technology	Contributing to group discussion Preparing visual materials	Highlight areas of this technology - eg. databases, graphics - by referring to previous sessions. Students to work in groups to prepare posters or other visual/textual materials on particular areas of information technology
			Period of practice/project

MODULE H1 THE INFORMATION TECHNOLOGY WORLD

Key vocabulary	INFORMATION TECHNOLOGY DATABASE DATA BANK GRAPHICS ROBOT EXPERT SYSTEM NETWORK
Resources	Video playback facilities Video BBC Computer Programme 'Things to come' (Page 335) Video BBC Computer Programme 'Let's pretend' (Page 336)
Assessment	Performance at group work

MODULE H2 INFORMATION TECHNOLOGY IN SOCIETY

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing

Aim 5 Objectives: The student will be able to:
(i) identify and describe a specified number of the main areas of information technology in use or under development
(ii) describe a specified number of the social implications of information technology for work, leisure and the home

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work, or computer check-test
Information technology applications	The social implications of the use of information technology	Contributing to group discussion Preparing a list of arguments and presenting them to the class	Group discussion of social effects of IT in areas such as privacy, employment, the home, defence, education etc. Students to work in two groups to produce OHPs, one giving benefits of technology, one dangers. OHP's then to be presented and discussed
New vocabulary	The concept of machine intelligence (in simple terms)	Extracting information from visual material. Contributing to group discussion	Introduce the concept of artificial intelligence. Illustrate with excerpts from BBC computer programme 'The Thinking Machine', and the BBC buggy. Group discussion of the implications of this for the future, and whether it is perceived as a threat
			Period of practice/project

MODULE H2 INFORMATION TECHNOLOGY IN SOCIETY

Key vocabulary	As for module H1	
Resources	Video playback facilities	
	Video BBC Computer Programme 'The thinking machine'	(page 337)
	OHP transparencies	
	BBC Buggy	(Page 407)
Assessment	None	

MODULE H3 THE WORLD OF WORK

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
- (i) use a simple predefined computer vocabulary correctly, both verbally and in writing

Aim 5 OBjectives: The student will be able to:
- (i) identify and describe a specified number of the main areas of information technology in use or under development
- (ii) describe a specified number of the social implications of information technology for work, leisure and the home
- (iii) realistically assess his/her potential for obtaining employment with the skills developed in the computer literacy course

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Relevant vocabulary from previous modules	Relevant concepts from previous modules	Responding to Q/A or other methods of review; revising previous material	Introductory review by either Q/A, group work or computer check-test
Vocabulary related to computing jobs	How computer technology relates to the world of work	Contributing experience of work and computers to group discussion	Discuss jobs to be found in the computer industry or related fields, using students' experience during the course and at work/in job rehearsal
Job vocabulary	The features of particular computing jobs	Completing worksheet	Student activity to work in groups filling in worksheet 45. Some parts may be filled in initially by the teacher. Plenary session
Job vocabulary	The relevance of information technology to job aspirations	Contributing to group discussions	Exposition and group discussion to map out on the board a typical working day in the life of someone affected by information technology. Relate work covered during the course to students' own job aspirations
			Period of practice/project

MODULE H3 THE WORLD OF WORK

Key vocabulary	SYSTEMS ANALYST DATA CONTROL CLERK PUNCH OPERATOR	
Resources	Worksheet 45 'Job search'	(Page 332)
Assessment	Filling in worksheet	

Worksheet 45 Module H3

Job Search

Name.................

At work, investigate which jobs involve using computer equipment or information technology, find out what qualifications are necessary to do that job and what training is needed.

Fill in the chart below.

JOB TITLE	TYPE OF EQUIPMENT USED	QUALIFICATIONS NEEDED	TRAINING NEEDS

Now complete the following sentences:

The job I would like is...

....

In order to get the job I must...

....

Attitudes

PURPOSE:	To discover the attitudes of a target group of people to computers
TIME ALLOWED:	8 hours
ABILITY NEEDED:	None
OBJECTIVES:	The student will conduct a survey on attitudes to computerisation
RESOURCES:	No special resources
PRESENTATION TO STUDENTS:	i) Pick realistic target group, in discussion ii) Student(s) to design questionnaire, with guidance from teacher iii) Survey to be made iv) Questionnaires to be analysed (this could be done by computer as an extended part of the project) v) Presentation of results, and decision on actions which could be taken
ASSESSMENT:	Design of questionnaire Asking questions Analysing answers

Project 21 Section H

A computer job

PURPOSE: To investigate and record details about a particular type of computer job

TIME ALLOWED: 3 hours

ABILITY NEEDED: General computing knowledge from course

RESOURCES: No special resources

PRESENTATION TO STUDENTS:

i) Student to choose appropriate job, with guidance from teacher

ii) Investigation of what is involved in the job selected; if possible, someone holding such a job should be visited, consulted and asked a prepared list of questions

iii) Preparation of illustrated project report

ASSESSMENT:

Investigation
Project report

Video: Module H1

BBC Computer Programme - 'Things to come'

General theme

Information technology and its effect on jobs. (Note that this program is extremely optimistic in its outlook, giving no thought to unemployment or related problems).

Detailed breakdown

a) The agricultural revolution. Horse-drawn ploughs to more efficient forms of power - steam, and the internal combustion engine. In any industry, the introduction of automation increases efficiency and decreases the number of people employed.

b) Case histories of dairy cows.

c) The use of microcomputers as low-cost computer power; their cheapness, reliability and accuracy.

d) Information processing. Money and financial transactions seen as an exchange of information. Paying the electricity board through a bank and following the movement of bank paperwork throughout the day.

e) Contention that this type of routine clerical job will soon disappear, leaving people free to engage in fulfilling, creative jobs etc.,etc.

f) Development of the manufacture of mousetraps from small beginnings to the point where most of the staff of the company are involved in information processing, not mousetrap manufacture. Vulnerability of these jobs to the new technology.

Postscript: where to now?

BBC Computer programme - 'Let's pretend'

General theme

The use of the computer in modelling and simulation.

Detailed breakdown

a) Pilot training in a computer-controlled simulation of an aeroplane cockpit.

b) Chess, Monopoly, Lunar Landing etc. used to show that simulations may work without incorporating all factors involved in real life.

c) Use of a computer for financial modelling.

d) Using a computer to reconstruct the past by determining what really happened in a car crash, taking into account the known factors and reconstructing events, speed etc.

e) BBC Computer program showing model of water leaking from a pond, using a chart and graphics.

f) Large-scale modelling; the European Weather Centre using a KRAY 1 to predict the weather for ten days ahead.

g) A model of the Humber Bridge wind tunnel put on a computer and then tested with varying factors to anticipate disasters.

Video:

BBC Computer Programme - 'The thinking machine'

General theme

Development of computers which can work out the answers to problems without specific prior instructions.

Detailed breakdown

a) The difficulty of teaching a computer to find its way round a maze; K9 doing it at Hampton Court by memorising the route.

b) Teaching the BBC micro to play noughts and crosses proficiently by instructing it in the rules and letting it build up tactics playing games and remembering what happens.

c) Problems associated in enabling computers to recognise pictures and photographic images, illustrated by the different shapes presented by a person sitting on a chair.

d) Discussion of the difficulty of programming a computer to be able to extract information from a text and answer questions on it; illustrated with a story about a restaurant accident, and a series of questions.

e) Use of an expert system to diagnose why a car won't start. The principles of this type of system.

f) An expert system implemented on a microcomputer in a hospital and used to aid in diagnosis after a case history has been taken manually.

Section I - VISITS

Page

This section looks at computer literacy outside the classroom, by visiting computer installations and by job rehearsal in a working environment.

* Modules I1 and I2, VISIT TO AN OUTSIDE INSTALLATION, involve the student in a visit to an outside user of computers, in order to link the kind of work done in the classroom to a practical use of computers in business, industry, or other settings. 340

Modules I3 and I4, ON THE JOB, JOB REHEARSAL, are concerned with involving the student in job rehearsal in a computer environment. Where a student is on work placement, tnis may be organised through the employer. 342

Module specific resources are referred to under each module heading and grouped together at the end of the section together with the following materials which may be used at the teacher's discretion:

Projects: 22 Visit 349

Key vocabulary of core modules is explained in the GLOSSARY 505

* denotes core modules

MODULES I 1/2 VISIT TO AN OUTSIDE INSTALLATION

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
- (i) use a simple predefined computer vocabulary correctly, both verbally and in writing
- (ii) list the basic elements of a computer system and state their functional relationship to one another
- (iii) recognise and distinguish between mainframe computers, minicomputers and microcomputers

Aim 4.

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Previous and new vocabulary	The organisation of a computer installation	Planning set tasks	Introduce the organisation being visited; describe its basic organisation and function. Distribute handouts and allocate tasks during visit
Relevant vocabulary	Equipment used in a computer installation, and its function	Using computer equipment Filling in gapped handouts	Tour of computer facilities; where possible, hands-on experience of using the equipment should be provided for the student
Equipment seen on visit	How the installation seen in the visit relates back to what has been learned in the classroom	Completing gapped handouts and contributing to discussion	Completion of set tasks. Plenary session. Review of visit
			Period of practice/project

MODULES I 1/2 VISIT TO AN OUTSIDE INSTALLATION

Key vocabulary	Consolidation of vocabulary met in previous modules
Resources	Access to a suitable computer installation Worksheet (worksheet 46 is included here as an example; it relates to a particular installation) (page 347)
Assessment	Performance at worksheet

MODULES I 3/4 ON THE JOB - JOB REHEARSAL

COURSE AIMS AND OBJECTIVES

Aim 1 Objectives: The student will be able to:
(i) use a simple predefined computer vocabulary correctly, both verbally and in writing
(iii) recognise and distinguish between mainframe computers, minicomputers and microcomputers

Aim 4

Aim 5

MEMORY	UNDERSTANDING	DOING	STRATEGIES/ACTIVITIES
Previous vocabulary New vocabulary related to the computer application being experienced	How the knowledge and skills developed in the classroom relate to a 'live' use of computer technology	Using the skills developed during the course to successfully handle an application of information processing by computer technology.	Job rehearsal in local industry, commerce, or in another setting which uses computers
			Period of practice/project

MODULES I 3/4 ON THE JOB - JOB REHEARSAL

Key vocabulary	Consolidating vocabulary used in previous modules.
Resources	As provided on employer premises
Assessment	Performance in job rehearsal

Computer Literacy - visit to The Park computer site

During this visit, you will be shown three minicomputers which are used by the staff and students of the college. One is of a type called an ICL 2900; the other two, which are very powerful minicomputers and can do almost as much as mainframes, are both called PRIME 550's.

You will also see other pieces of equipment which are linked up to these computers. These pieces of equipment are called 'peripheral devices'. Some of them are used to input data to the computer, some are used to produce computer output, and some are used for backing storage.

On the next page of this handout you will find a list of different types of peripheral devices which you will be seeing on the visit. Keep your eyes and ears open while you are being shown around and see if you can decide what each of them is used for - input, output or backing storage. To make things more difficult for you, some of them can be used for more than one!

When you are asked to fill in the handout overleaf, please tick what you think each device is used for. You may tick more than one box if you wish.

Worksheet 46

Modules I 1/2

Computer Literacy Assessment - Peripherals

Peripheral name Is it	INPUT?	OUTPUT?	BACKING STORAGE?
Card reader			
Printer			
Magnetic disc drive			
Teletypewriter			
Paper-tape punch			
VDU and keyboard			
Paper-tape reader			
Magnetic tape drive			

Computer Literacy - punched cards

Card punches such as the ones you will see on this visit are used for what is called data preparation, this means turning ordinary written documents that people can read into a form that computers can understand.

When data has been punched on cards using one of these machines, it will appear as a pattern of holes. Later on, the cards will be fed into a computer, and the computer will read them by shining a light through the holes.

You will notice that the data is also written in ordinary letters on top of the card. The computer won't be able to read this writing, it's there so that people who have to handle the cards can understand what they say, since people aren't usually very good at reading holes!

First, punch a card with your name and the first line of your address. Then punch cards with the following data on:

```
THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG 0123456789
INPUT A
INPUT B
LET C = A + B
```

Logging in to the Prime computer

1. Check that your VDU is plugged in and switched on.

2. Type LOGIN followed by a space, then your UFD-name (this is three letters which the teacher will tell you); then press the RETURN key.

3. You will be asked to give a password; your teacher will tell you what it is. Type this in and then press the RETURN key. (You will notice that the password doesn't appear on the screen; this is to stop other users seeing it).

   When you are logged in successfully, OK, will be displayed on your screen.

Running a program from the Basic library

Type BASICV BASLIB* followed by the name of the program you want to run and the RETURN key. This will load the program you want and start it running.

Logging off the computer

Type LO and then RETURN

Visit

PURPOSE:	To report on a visit to a computer installation
TIME ALLOWED:	4 hours + visit
ABILITY NEEDED:	Basic computer knowledge (modules B1 to B4)
RESOURCES:	Access to computer installation. OHP material
PRESENTATION TO STUDENTS:	i) Visit to an appropriate installation to be arranged for a student or group of students ii) Preparation of tasks; devising questions to be answered, observations to be made, sketches to be drawn etc., in preparation for visit iii) Visit iv) Preparation for presentation v) Student(s) to make presentation of the results of the visit to the class, using OHP's etc.
ASSESSMENT:	Preparation Presentation

Section Z - ASSESSMENT

This section provides methods of assessing the knowledge and skills of students on the computer literacy course, using a variety of methods.

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- *Z1 - INTRODUCTION TO ASSESSMENT 359
- *Z2 - ASSESSMENT REVIEW 360
- *Z3 - FINAL ASSESSMENT PROCEDURE 361

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- Programming Commands Sheet 369
- Computer Operation Assessment 370
- Computer Program Assessment 371
- Computer Operation Profile 372
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- End of Course Skills Questionnaire 374

Statement of student achievement 375

Programs:
- HANGMAN 377
- VTESTI-4 378
- VTESTS-7 378
- EDITOR 391
- FEUTEST 391

* denotes core modules

THE ASSESSMENT PROCEDURE

The basic strategy is to use the assessment procedure a) to motivate the student and promote further learning by involvement in the process itself, and b) to provide evidence of progress and achievement. There is an initial assessment of experience, ability and attitude (Module Z1), the student maintains a student progress log in which the results of individual and group activities/projects/tests are recorded, and there is at least one mid course review (Module Z2) and a final assessment procedure (Module Z3) at the end of the course. The final assessment review will take place between student and tutor and will use the student progress log as the basis for the completion of the Statement of Student Achievement. This does not prevent the use of tutor-administered tests of performance and indeed the guidelines contain examples of such tests.

Student Achievement

It is not possible to discuss assessment without a consideration of student achievement. It is possible to state that all students completing the courses which were evaluated achieved the objectives set them, even if the level of achievement varied. The most important conclusion which can be drawn is that conventional descriptions of student ability and potential have little relevance in this connection. Some students who experienced learning difficulties in other areas have shown that they have the ability to develop both the knowledge and the skills that this course sets out to impart. There would appear to be at least two factors involved in this phenomenon. First, in attempting learning by doing and then transferring this into the achievement of cognitive learning objectives, it was clear that 'underachievers' were able to obtain early success and derive positive motivation from it. Secondly, the interaction with the computer provides the student with a non-threatening situation in which success will be positively reinforced. Tutors are, therefore, advised not to make any assumptions about student potential based upon traditional descriptions of ability.

Assessment Materials

Assessment materials are suggested for each module. These are only a guide to users but attempt to match the range of skills it is hoped the students will acquire. However, the range of students for whom the modules have been found useful is already very wide and it is unlikely that assessment materials produced for one group of students will perform satisfactorily over this full range. Additionally it is intended that the approach by teachers to the use of the modules should be flexible and any suggested teaching strategies are not intended to be prescriptive.

It was, therefore, assumed that teachers making use of the modules would, whilst welcoming the inclusion of prepared materials, also wish to produce test materials of their own to match their students and their approach.

Category of Skills

The modules have been presented in a form which assists in the preparation of an assessment specification based on a simple taxonomy of skills, namely:

M = Memory
U = Understanding
D = Doing

A module might include under these headings:

Memory - Relevant vocabulary and concepts from previous modules, eg mainframe, mini, micro.
New vocabulary related to 'Computers at work' eg bar codes, data capture, etc.

The use of computers at work both in information processing and control.

Examples of use of computers in selected jobs relevant to student aspirations.

Understanding - Selective extraction of information from a variety of sources.

Decision making based on own aspirations and knowledge of computer applications.

Doing - Practical skills - use of micro computer information.

Multiple choice objective tests are appropriate for assessing the information retained by the student - the 'memory' component. Whilst performance on some of these tests could demonstrate 'understanding', this is better assessed through the results of the structured activities and worksheets; for examples see the Student Activity Record (Page 365). These activities will also permit assessment of the practical skills ('doing') that the student has acquired. In order to provide both 'hands on' participation and further evidence of practical skill levels the objective tests mentioned above are provided as software packages for use on the computer. Three software packages are included, these are documented at the end of this section and the program listings are to be found at the end of this guide. These are;-

1) HANGMAN - a program which allows the user to play 'Hangman' and identify computer jargon; useful for lower ability students and also as a test for loading and running programs.
2) V TEST 1-4 & V TEST 5-7 - programs for computerised multiple choice vocabulary check tests designed to link up with areas in the computer literacy course. These are referred to within the student progress log and have been extensively used on pilot courses. The documentation is produced so that it may be used as a 'paper and pencil' test without alteration.

3) FEUTEST PROGRAMS

This computer package offers the teacher the most freedom and flexibility to match assessment to the ability of the student group. It will allow teachers to produce their own materials for testing the 'memory' objectives with the minimum of effort. The documentation describes a package which enables -

a) Teachers to produce their own materials for testing student learning on a particular module, or range of modules,

b) Students to respond to the test material in an interactive mode using some of the practical (Doing) skills acquired in completing the modules.

Assessment of Computer Literacy In Relation to the Parent Course Profile

The CGLI 365 profile of attainment level in basic abilities is a widely used model for the recording of assessment in pre-vocational scheme. Therefore it is this profile which is considered here. Computer literacy is included as part of the CGLI 365 Vocational Preparation course at GlosCAT and the staff involved have used the assessments made on computer literacy (see Student Activity Record Page 365) as a basis for the completion of this profile. The conclusion reached was that assessments made on the developing abilities in computer literacy could quite easily contribute to basic skill attainment levels with very few exceptions (see below).

An attempt has been made on some project and activity worksheets to give an indication of the levels of basic skills attainment that can be indicated by performance in them. Some computer literacy activities and their relation to various basic skills attainment levels (as defined in CGLI 365) are set out below:

Social Skills

1) Working with colleagues. Evidence of all levels of achievement can be obtained from the completion of group exercises.

Levels 1 & 2 - Sizes of Computer (WS 7 Page 66)
1, 2 & 3 - Industrial application (WS40 Page 268)

All levels - Stock Control (WS33 Page 177)
- Customer Account System (WS32 Page 173)

2) Working with those in Authority. All levels can be considered in the light of tutor-student relationships.

3) Self awareness.

Levels 1 & 2 - Initial and Final Assessment (Z1 and Z3 Page 359, 361)
- Job Search (Page 37)
All levels - Student Progress log (Page 363)

(NB Some tutors expressed concern over gradings at levels 3 & 4)

Communication

1) Talking and Listening.

Evidence of all levels can be obtained from all aspects of the course, eg.

Levels 1 & 2 - Simple program production (WS17,24 Page 125, 136)
1, 2 & 3 - Group activities - Stock Control, Customer Account (WS32/33 Page 173, 177)

2) Reading and Writing

Levels 1 & 2 - All Worksheets
Levels 1,2,3,4-Student Progress log (Page 363)
'It's your computer' (Proj 2 Page 79)
Word Processing Exercises (WS 34,35 Page 227, 231)

3) Visual Understanding

Levels 1,2,3 - 'It's your Computer' (Proj 2 Page 79)

Graphic Exercises (WS 27,28,29,30,31 Page 139-144)

Practical Skills

1) Using Tools - It was considered that this skill was not demonstrated at all by the computer literacy course.

2) Working with machines. Computer operation was seen to be working with a machine but whilst evidence was provided at all levels on the operation of one machine a variety was not available. For all 4 levels see Computer Operation Profile.

3) Dexterity and Coordination. The level of keyboard skills was considered to relate to dexterity and coordination.

4) Measuring. Little direct evidence but the activity based upon optimisation of material use -'Glass utilisation' (Page 268) does provide evidence for levels 1, 2 and perhaps 3.

5) Calculating

Levels 1 & 2	- 'Elements of a Computer System'	(WS 3 Page 61)
	'What will a Computer do'	(WS 17 Page 125)
1,2,3	- Simple & complex program exercises	
	Wages program	(Proj 8 Page 149)
	Customer Accounts System	(WS32 Page 173)
	Stock Control	(WS 33 Page 177)

Decision Skills

1) Planning. This being the basis of programming, evidence is supplied for this criterion at levels 1, 2 & 3.
Evidence as to achievement of level 4 would come from a wide range of course/assessment activities, in particular programming and flowcharting (WS15 Page 119 levels 1 & 2)

2) Information Seeking

Levels 1 & 2	- Vocabulary & Programming Command Sheet.	
1,2 & 3	- Sizes of Computer	(WS 7 Page 66)
	It's your Computer	(Proj 2 Page 79)
1,2,3,4	- Applications	(WS 2 & 40 Page 37, 268)
	Job Search	(WS 2 Page 37)

3) Problem Solving

Levels 1,2,3	- Read & Amend simple program	(Z & WS 18 & 26) Pages 371, 127, 138.
	- Write & document program	(WS 22 Page 133)
	Job Search	37

4) Evaluating Results

All levels - Evidence from assessment procedure itself, completion of student progress log & in negotiated assessments (Z1 Z2 & Z3)

NB The computer literacy assessment is related to basic skills as defined by CGLI 365 profiling scheme, however it is anticipated that it could relate equally satisfactorily to other schemes.

MODULE Z1 **Introduction to Assessment** (for use at the start of a computer literacy course)

Purposes

1) To assess and record the pre-course knowledge, skills and interests of students in relation to computers and their applications.

2) To provide a basis for effective working relationships to develop between students and tutor.

3) To introduce the course aims and objectives to give students a target for achievement.

4) To prepare students to accept their responsibility in the process of assessment.

Strategy

This activity should be integrated with the induction procedures developed for the parent course.

1) Following welcome and introductions, give brief statement of what the student will be able to do at the end of the course.

2) Stress importance of discovering their starting point ie. their knowledge and previous experience of computers and their vocational aspirations.

3) Use questionnaire to produce an assessment of this starting point. Administer the questionnaire in small groups, each student filling it out individually but discussing gradings and sharing results with other group members.

4) Tutor to discuss questionnaire with each student.

5) Inform students that this is the starting point of assessment, stress the importance of assessment in helping them develop their knowledge and skills.

6) Introduce the student progress log and stress the students responsibility in maintaining it.

Resources - Questionnaire and assessment logs. (Page 363)

MODULE Z2 Assessment Review

This should be carried out at intervals; the frequency will be determined by the structure and duration of each course. The course tutor must ensure that the student progress log is being maintained by the student as well as by him or herself. In addition to this informal review there should be at least one formal individual interview between student and tutor to evaluate performance in line with the guidance given below. This could come at the halfway stage.

Purposes

1) To identify and confirm student progress by negotiation.
2) To motivate student to maintain and/or improve progress.
3) To reinforce the relationships between the course and students experience of work.

Strategy

1) Individual interview using student progress log. Tutor to discuss student's self ratings and scores obtained for tests, activities and/or projects.
2) Student and tutor to sign and date appropriate entries in the log.

MODULE Z3 Final Assessment Procedure

Purposes

1) To produce a summative assessment for each student.
2) To prepare a statement of future training potential and identify areas of training need.
3) To clarify students vocational aspirations with respect to computers and computing.

Strategy

1) The necessary face to face interview between student and tutor can be arranged to take place whilst the students complete the final questionnaire and compare their responses with those at the start of the course. This activity can be carried out in small groups.
2) During the interview student and tutor go through the completed student progress log and so produce the final statement of abilities.
3) Together the student and tutor will decide upon a record, a statement of future training possibilities and a list of work situations in which the student could use and develop the abilities gained during the course.

Computer Literacy STUDENT PROGRESS LOG

Name ....

Group ....

To the student It is your responsibility to maintain these records of your progress and in cooperation with your tutor to assess and record your achievements.

BY THE END OF THE COURSE, YOU WILL BE ABLE TO:-

1) describe the various types of computer and how they work, using the correct technical language.

2) operate a computer and design and write simple programs to control it.

3) operate a computer using software relevant to a range of work based activities.

4) describe the main areas of information technology and their likely effects on society.

5) make realistic decisions about your further training needs and employment prospects building upon the skills gained in this course.

Initial Skills and Experience Questionnaire

Put a ring around the answer where appropriate and fill in any extra details asked for.

EXPERIENCE

1) Did you ever use a computer at school? Yes No

if yes - state (a) what sort of computer was it ....
(b) briefly what did you use it for ....

....

2) Have you got a computer at home? Yes No
if no have any of your friends got one? Yes No
if a friend has one - have you used it? Yes No
if you have used a computer what did you do with it? ....

3) Have you come into contact with computers at work, either in a part-time job or on a work experience scheme? Yes No
if yes briefly describe what they do ....

....

KNOWING AND DOING

In this section try and rate yourself on the scale 1 to 4, select 1 if you think you have either no knowledge about the topic or cannot perform the task described, select 4 if you feel you either have a good basic knowledge of the topic or you can perform the task (obviously in between select 2 or 3). RING THE APPROPRIATE NUMBER

	1)	Knowledge about computers and computing	
DO YOU KNOW	(a)	the parts of a computer and how they work	1 2 3 4
	(b)	the main types of computer	1 2 3 4
	(c)	what computers can do	1 2 3 4
	(d)	the industrial and commercial uses of computers	1 2 3 4
	(e)	what a computer program is, what it does and how it is stored	1 2 3 4
	(f)	what programming languages are	1 2 3 4
	(g)	in what jobs a knowledge of computers would help	1 2 3 4
	2)	Ability in using a computer	
CAN YOU	(a)	input and run a simple program	1 2 3 4
	(b)	write and or correct simple	1 2 3 4
	(c)	select and load a program from backing storage	1 2 3 4
	(d)	run a program and input information and output results	1 2 3 4

YOUR CONFIDENCE AND ATTITUDE

Here try and rate your confidence in using computers and your attitude towards learning more about them and using them at work. Again use the 1 (not confident or interested) to 4 (very confident or interested) scale.

HOW	1)	confident are you that you could use a computer without assistance	1 2 3 4
	2)	interested are you in learning how to use one	1 2 3 4
	3)	interested are you in working with computers	1 2 3 4

STUDENT ACTIVITY RECORD Name ....

Below are a list of activities which can contribute towards the assessment of your achievements. You must ensure that you fill in the information required and keep all completed activities and projects as part of your progress log.

Item	Worksheet/ Testsheet Project No	Date completed	Grade or Scores &/ or Comments (Student & Tutor)
1) COMPUTER WORKING i) Vocabulary Sheet			
ii) Vocabulary (V) Test			
iii) Programming Commands			
iv) Elements of a Computer system			
v) Types of Computer			
vi) 'Its your Computer'			
vii) 'What will the Computer do?'			
viii)			
ix)			
x)			
2) OPERATION OF COMPUTER (N. Profile to be completed) i) Input & run simple program			
ii) Set up system, load from backing store & run program			
iii) 3) CONTROL OF COMPUTER i) Read & amend simple program			
ii) Write simple program			
iii) Write & document more complex program			
4) COMPUTER APPLICATION i) Industrial applications			
ii) Business application			
iii) Use of teletext system			

4) COMPUTER APPLICATION - continued

Item	Worksheet/ Testsheet Project No	Date	Grade or Score &/ or Comments (Student & Tutor)
iv) Stock control package			
v) Customer Accounts package			
vi) Word processing			
vii) Graphics exercise			
viii) Microelectronic control			
5) COMPUTERS & EMPLOYMENT			
i) Social Implications			
ii) Job search			

Computer Literacy NAME ________________________

VOCABULARY

Below are a list of some of the words you will meet. When you think you understand what a word means put a TICK after it and then the DATE. You understand the word if you can explain what it means to someone - or perhaps give an example of what it does or what it is.
There are also spaces left for other words you meet to be written in.

VOCABULARY

A ____________

B Backing store
Bar code
Basic

____

C Card Reader
Central Processing Unit (CPU)
Circuit
Computer

____

D Data
Data base
Data capture
Data file
Data preparation
Disc
Disc drive

____

E ____________

F Floppy disc
Flow chart

____

G Graphics (computer)

____

H Hardware

____

I Information
Information circuit
Information technology
Input
Input devices

____

K Keyboard

____

VOCABULARY

L Languages (computer)
Laser scanner
Light pen

____

M Main frame computer
Main store
Memory
Menu
Micro computer
Micro chip
Micro processor
Micro electronic control
Mini-computer

____

N ____________

O Output
Output devices

____

P Paper tape
Peripheral devices
Printer
Processing
Program
Punched card

____

R ____________

S Software

____

T Tape (magnetic)
Teletext
Teletypewriter
Terminal

____

U ____________

V VDU (Visual Display Unit)

____

W Word processor

____

XYZ ____________

Computer Literacy

NAME______________________________

Computer Vocabulary (V Test) Assessment

Run the V TEST programs on your microcomputer and record the results below

		SCORE	MAXIMUM
V TEST	1)		5
	2)		5
	3)		5
	4)		10
	5)		6
	6)		6
	7)		7

Computer Literacy NAME______________________________

BASIC Programming Commands Sheet

Below is a list of programming words, when you understand each one put a TICK after it and the date. 'Understand' means that you can explain it to someone or use it in a program

PRINT ____________________

INPUT ____________________

$ ____________________

LET ____________________

LOAD ____________________

CHAIN ____________________

SAVE ____________________

RUN ____________________

LIST ____________________

NEW ____________________

OLD ____________________

IF-- THEN ____________________

GO TO ____________________

END ____________________

Computer Literacy NAME

Computer Operation assessment

1) Check your microcomputer system is set up correctly
ie. VDU - micro - cassette recorder

2) Switch on

3) Insert BBC Welcome tape

4) LOAD - 'Alphasort'

5) RUN - Alpha sort - input the following words

Output - Terminal - Keyboard - Basic - Data

Software - computer - Floppy disc - V D U

Evaluation

State below any stages where you received assistance

1)

2)

3)

4)

Briefly say what the program did

Computer Literacy NAME________________________________

Computer Program Assessment

1) Look at the program listed below; are there any errors?
If yes, then correct them and indicate on the program where you have done so - by putting a ring around the change.

2) Input the program and run it
If it works write in below that it worked first time and get someone to check.
If it does NOT then correct it where necessary and then run it.

PLEASE ASK FOR HELP IF STUCK BUT RECORD WHERE ASSISTANCE GIVEN BELOW.

```
10  PRINT   HELLO WHAT IS YOUR NAME

20  PRINT   "WELL" :  NAME$

30  INPUT   NAME$

40  PRINT   ARE YOU HAPPY

50  INPUT   ANSWER$

60  PRINT   WE WILL SOON CHANGE THAT
```

Program worked on 1st attempt __ 2nd __ 3rd __ 4th __

Assistance given/not given.

Computer Literacy

Computer Operation Profile

Name ....

To be completed by student and tutor, by signing in the box when that stage of competance is reached and inserting the date in the box below it.

	NO		YES	
1. Can identify elements necessary to set up micro-computer system i.e TV., micro and cassette.				
2. Can correctly set up the above elements and switch on and check system ready for use.	CANNOT	CAN WITH ASSISTANCE	CAN WITHOUT ASSISTANCE SLOWLY	CAN WITHOUT ASSISTANCE QUICKLY
3. Can select and load a specific program from tape.				
4. Can run specified program correctly inputting required data and recording results.				
5. Can recognise error situations and recover and re-run programs.				

Computer Literacy

Name............................

Job Search

At work, investigate which jobs involve using computer equipment or information technology, find out what qualifications are necessary to do that job and what training is needed.
Fill in the chart below.

JOB TITLE	TYPE OF EQUIPMENT USED	QUALIFICATIONS NEEDED	TRAINING NEEDS

Now complete the following sentences

The job I would like is --

In order to get the job I must ---------------------------------------

----

End of Course Skills Questionnaire

Name ....

KNOWING AND DOING

In this section try and rate yourself on the scale 1 to 4; select 1 if you think you have either no knowledge about the topic or cannot perform the task described, select 4 if you feel you either have a good basic knowledge of the topic or you can perform the task (Obviously in between select 2 or 3). RING THE APPROPRIATE NUMBER

6

1) Knowledge about computers and computing

DO YOU KNOW
(a) the parts of a computer and how they work 1 2 3 4
(b) the main types of computer 1 2 3 4
(c) what computers can do 1 2 3 4
(d) the industrial and commercial uses of computers 1 2 3 4
(e) what a computer program is, what it does and how it is stored. 1 2 3 4
(f) what programming languages are 1 2 3 4
(g) in what jobs a knowledge of computers would help 1 2 3 4

2) Ability in using a computer

CAN YOU
(a) input and run a simple program 1 2 3 4
(b) write and or correct simple programs 1 2 3 4
(c) select and load a program from backing storage 1 2 3 4
(d) run a program and input information needed and output results 1 2 3 4

YOUR CONFIDENCE AND ATTITUDE

Here try and rate your confidence in using computers and your attitude towards learning more about them and using them at work. Again use the 1 (not confident or interested) to 4 (very confident or interested) scale.

HOW
1) confident are you that you could use a computer without assistance 1 2 3 4
2) interested are you in working with computers 1 2 3 4
3) useful do you think this course was. 1 2 3 4

Computer Literacy

Statement of Student Achievement

To be completed by the student and tutor following a consideration of the activity record and the end of course achievement questionnaire

----------------------can:- Level of Achievement

1) describe the various types of computer and how they work using the correct technical language. ☐
Level 1 - cannot be done
  2 - can be done using a restricted basic vocabulary
  3 - can be done using the full basic vocabulary
  4 - can be done confidently using an extended vocabulary

2) operate a computer and design and write simple programs to control it ☐
Level 1 - cannot be done
  2 - can be done with assistance
  3 - can be done without assistance with elementary programs
  4 - can be done confidently without assistance and producing more complex programs

3) operate a computer using software relevant to a range of work based activities ☐
Level 1 - cannot be done
  2 - can be done with assistance
  3 - can be done without assistance using simple software packages and with some assistance on more complex tasks
  4 - can be done confidently using a wide range of software packages

4) describe the main areas of information technology and their likely effects upon society ☐
Level 1 - cannot be done
  2 - can be done using a restricted number of examples
  3 - can be done using a wide range of examples and indicating an appreciation of the implications
  4 - can be done fluently using information to support proposals made

STUDENT CONFIDENCE AND ATTITUDE

To be completed by tutor in negotiation with student

____

____

____

Program Name:

HANGMAN

BASIC Version

BBC BASIC

Program Function

This program allows the user to play HANGMAN at the VDU screen. The computer accesses a list of words, which have been stored in data statements in the program, and the user is asked for a number to mark the starting position in the list. The normal hangman rules then apply, with the computer drawing a scaffold for wrong guesses.

Special Features

Extensive use of computer graphics.
The program has a built-in vocabulary of computer words. These can be altered if required.

Available from:

GlosCAT - listing provided (Appendix A page 460)

Program Name

VTEST1-4

VTEST5-7

Basic Version

BBC BASIC

Program Function

These two programs contain computerised vocabulary tests. The format used is of multiple choice questions; the student is asked a question and then offered a choice of answers. This method was chosen in order to give the student who is a poor speller an equal chance to score well at the tests with the more literate student.

The tests have been designed to link up with areas of work in the computer literacy course - eg. 'elements of a computer system', 'programming', 'computers at work' etc. They are intended to provide a tool to assist the teacher in assessing the speed at which students are acquiring key computer vocabulary. To encourage students to improve their performance at the tests, the computer program will tell the user the score after taking each test and will then give him the chance to improve his score by taking the test again.

VTEST1-4 holds the first four vocabulary tests; the remaining three are held in VTEST5-7. Copies of the questions asked are shown overleaf.

Special Features

Extensive use is made of BBC graphics facilities

Available from:

Glos CAT - listing provided (Appendix A page 490/498)

V-TEST1

a) A computer is:

1. A pocket calculator
2. An electronic machine which follows a set of instructions to process data
3. A robot
4. A person who writes instructions for a machine to follow

b) Hardware is:

1. Any computer parts or equipment
2. The tools used to build computers
3. Very small computers which can be built on chips of silicon
4. Instructions to be followed by a computer

c) A computer program is:

1. Anything on T.V. about computers
2. A set of special computer cards which have holes punched in them
3. A timetable showing what work is to be done using a computer
4. A set of instructions which a computer can follow

d) Software is:

1. People who work with computers
2. The programs which are used with a computer
3. Wires, cables and electricity
4. Ways in which computers can store information

e) A microprocessor is:

1. A desk-top sized computer such as the BBC computer
2. A type of watch that has no hands
3. A machine that makes things look bigger
4. A tiny computer processor usually built on a chip of silicon

V-TEST2

a) The smallest kind of computers, which can sit on desk tops, are called:

1. Minicomputers
2. Microcomputers
3. Main frame computers

b) Medium sized computers, which can deal with most things except large volumes of data, are called:

1. Minicomputers
2. Microcomputers
3. Main frame computers

c) The largest computers, which can handle huge volumes of data at a very fast speed, are called:

1. Minicomputers
2. Microcomputers
3. Main frame computers

d) The central processing unit (CPU) is:

1. A kind of keyboard which is used for typing data into the computer
2. The 'brain' of the computer, where the work is done
3. An electrical junction box
4. A screen which displays messages put out by the computer

e) A computer peripheral is:

1. Any piece of computer equipment linked to the CPU
2. A machine which reads the messages on punched cards
3. A man who writes computer programs
4. An electrical lead to connect one piece of equipment to another

V-TEST3

a) Which instruction would you use to copy a program called MEET into the computer memory ?

1. RUN MEET
2. LOAD MEET
3. RUN "MEET"
4. LOAD "MEET"
5. RUN "MEET"
6. LOAD 'MEET'

b) Which of these instructions would start the program working ?

1. GO
2. RUN MEET
3. RUN 'MEET'
4. LOAD
5. RUN
6. RUN "MEET"

c) When typing in an instruction at a computer keyboard, which key should you remember to press at the end ?

1. DELETE
2. REPEAT
3. ESCAPE
4. RETURN

d) What instruction would you use to wipe off a program held in the computer memory ?

1. NEW
2. DELETE
3. WIPE
4. CLEAR

e) What is the correct name for the small flashing bar that shows you where you are on the screen ?

1. A hyphen

2. RETURN
3. The Cursor
4. A microdot

414

V-TEST4

a) A programming language is:

1. Mathematical symbols
2. French
3. An expensive type of computer which can talk and listen
4. A set of rules and vocabulary for writing computer instructions

b) BASIC is:

1. A type of microcomputer
2. A computer course for beginners
3. A programming course for beginners
4. How the different parts of a computer are linked together

c) What should each line of a program begin with ?

1. RUN
2. A program instruction
3. RETURN
4. A line number

d) Which BASIC instruction would you use if you wanted your program to take in information from the keyboard ?

1. LET
2. PRINT
3. INPUT
4. GOTO
5. IF
6. THEN

e) Which one allows you to perform calculations on your data?

1. LET
2. PRINT
3. INPUT
4. GOTO
5. IF
6. THEN

f) Which one lets you test your data and take different actions according to the results of your test ?

1. LET
2. PRINT
3. INPUT
4. GOTO
5. IF
6. THEN

g) Which one sends control to a different part of your program ?

1. LET
2. PRINT
3. INPUT
4. GOTO
5. IF
6. THEN

h) Which one displays data on a VDU?

1. LET
2. PRINT
3. INPUT
4. GOTO
5. IF
6. THEN

i) What would you type into the computer to look at a program held in memory ?

1. LIST
2. LLIST
3. LOAD
4. PRINT

j) What instruction would store the program held in memory on backing storage ?

1. STORE
2. SAVE
3. NEW
4. LLIST

V-TEST5

a) A computer application is:

1. Any piece of computer equipment
2. A practical use for a computer
3. A special form which people working with computers have to fill in
4. A computer which can only do one type of job

b) In the computer world, D.P. stands for:

1. Distributed programming
2. Data processing
3. Digital processor
4. Direct production

c) In the computer world, I.T. stands for:

1. Integrated testing
2. Instructional technician
3. Input task
4. Information technology

d) A word processor is:

1. A computer with programs which are specially designed for handling text
2. A mechanical secretary
3. The part of a computer which processes the data
4. A system for sending electronic mail

e) A computer database is:

1. A place where computer equipment is stored
2. A central collection of information held by a computer
3. A backing storage device
4. The head office of any company that makes use of a computer system

f) A software package is:

1. A metal container for any computer hardware
2. A programming language

3. The container for either a floppy disc or a cassette
4. Standard ready-written software that you can buy

V-TEST6

a) Data preparation is:

1. Converting data into a form that a computer can understand
2. Punched cards
3. Processing data in a computer's memory
4. Designing a computer system

b) Data validation is:

1. Processing data in a computer's memory
2. Punched cards
3. Programming a computer to display information on the VDU screen
4. Checking data for errors

c) Batch processing is:

1. A system which allows several people to use a computer at once
2. Running data through the computer a batch at a time
3. A group of programmers working on similar programs
4. A type of backing storage which can hold a lot of data

d) On-line processing is:

1. Sending data to and from a computer down a communications line
2. Computing in schools
3. Using a computer as part of a production line on the factory floor
4. British Rail's computer system for controlling trains

e) Real-time processing is:

1. Computers with a built-in timing device
2. Several people using a computer at once
3. Two or more computers processing each other's data
4. On-line processing where details held on a computer file are altered there and then

f) A time-sharing system is:

1. A computer with a built-in timing device
2. Operating a computer in eight-hour shifts

3. More than one person using a computer at the same time
4. A method of paying for the use of a communications line

V-TEST7

a) Who designs a computer system to meet a user's requirements ?

1. The data processing manager
2. The computer programmer
3. The punch operator
4. The systems analyst
5. The computer engineer
6. The data control clerk
7. The computer operator

b) Who writes software for the system ?

1. The data processing manager
2. The computer programmer
3. The punch operator
4. The systems analyst
5. The computer engineer
6. The data control clerk
7. The computer operator

c) Who runs this system on the computer when it is complete ?

1. The data processing manager
2. The computer programmer
3. The punch operator
4. The systems analyst
5. The computer engineer
6. The data control clerk
7. The computer operator

d) Who will repair the hardware if it breaks down ?

1. The data processing manager
2. The computer programmer
3. The punch operator
4. The systems analyst
5. The computer engineer
6. The data control clerk
7. The computer operator

e) Who checks the input and output to the system to make sure that it is correct ?

1. The data processing manager
2. The computer programmer
3. The punch operator
4. The systems analyst
5. The computer engineer
6. The data control clerk
7. The computer operator

f) Who converts the data on input forms into holes on cards or paper tape ?

1. The data processing manager
2. The computer programmer
3. The punch operator
4. The systems analyst
5. The computer engineer
6. The data control clerk
7. The computer operator

g) Who is responsible for the computer and the staff who run it ?

1. The data processing manager
2. The computer programmer
3. The punch operator
4. The systems analyst
5. The computer engineer
6. The data control clerk
7. The computer operator

Program Names

EDITOR AND FEUTEST

Basic Version

BBC BASIC

Programme Function

These programs form a package which allows the teacher to create multiple choice computer based check tests and students to operate them.

Special Features

Detailed overleaf

Available from;

GlosCAT - listing provided (Appendix A page 444/451)

'FEUTEST' OBJECTIVE TEST PROGRAMS

Introduction

This system enables objective tests to be created and edited by lecturers on the BBC microcomputers and then run by the students.

There are two programs:

EDITOR - Creates, Deletes, Lists and Edits Tests
FEUTEST - Runs the tests

Both programs make use of standard messages, colours and display lines to make them as easy to use as possible.

Running the Programs

To run the programs load the disc in the disc drive, then enter:

```
CHAIN "program"<return>
```

where program is either EDITOR or FEUTEST,

for example:

```
CHAIN "EDITOR"
```

Technical Details

Equipment required is:

1 BBC Model B micro-computer with disc interface
1 Monitor (preferably colour)
1 Disc Drive (40 or 80 track)
1 Printer (optional - if hard-copy is required)

NOTE: Although it is possible to run the programs on a 40 track disc system it is more advantageous to use an 80 track disc as it is able to store a much larger number of tests

EDITOR

Introduction

This program performs the following functions:

1 CREATE
2 DELETE
3 LIST
4 EDIT

on an objective test set up by a lecturer.

When the program is run a menu is displayed showing the four options listed above and a prompt for the option required. To choose an option, enter the number followed by RETURN. All input to the computer must be followed by pressing the RETURN key.

A test is made up of:

a) Title describing the test
b) Maximum of 20 questions, each containing:
    Question - 10 lines
    Responses - 5 lines
    Correct response - 1 line
    Explanation - 17 lines
  making a total of 33 lines

The length of each line must not exceed 38 characters.

Running the program

To run the program, enter:

```
CHAIN "EDITOR"<return>
```

Some Conventions

ESCAPE - The ESCAPE key will return you to the menu from any stage of the program

COLOUR - Certain colours signify different things:

YELLOW is used for all prompts
CYAN shows normal output from the computer
MAGENTA shows options which can be chosen
RED is used for error messages
WHITE appears for all user input

TO CONTINUE - at many stages in the program the prompt

PRESS RETURN TO CONTINUE

will appear. This happens so that data can be viewed on the screen before the program continues. In some options it is also possible at this stage to return to the previous step by entering 'E' (for exit). Where this is possible it is mentioned in the appropriate section.

Option 1 - CREATE a test

This option is used when a new test is to be created.

After the option has been entered, the following message will appear:

Creating Test Number n

where n is the number of the test.

If there is no room for another test an error message will be displayed and the program will then return to the menu.

If there is room then there will be a pause of about one minute while space is being found on the disc - the red light on the disc drive will come on and the drive will make a noise.

After the disc has been prepared, the next prompt is:

Enter the Title of the Test:

The title can be anything up to the length of one line which describes the test.

Then, for each question, the following sequence will take place:

Question Number n	(n is the question number
Enter the question (10 lines,'EX7 to end)	(enter the question, up to 10 lines are permitted. Enter 'EX' to finish
Now enter the responses:	(enter the choice of possible answers from A to E
Correct response?	(enter the letter corresponding to the correct answer; ie. A, B, C, D or E

Now enter the explanation
(17 lines, 'EX' to end)

(enter the explanation of the correct
answer; up to 17 lines are permitted.
Enter 'EX' to finish

Question OK?

(Reply 'Y' if the question is alright,
otherwise 'N' to enter it again

After the question has been OK'd there will be some activity on the disc drive while the question is being stored, and then:

Any more questions?

If there are more questions to be entered, reply 'Y', else reply 'N' to return to the menu.

NOTE: It is possible to add questions after the initial test creation, by using Option 4 (EDIT)

Option 2 - DELETE a test

This option is used to delete a whole test from the disc.

The first question is:

Which test to delete?

Enter the NUMBER of the test you wish to delete.

If an erroneous number is entered an error message will be displayed, else the title of the test will be displayed:

Test is:
<test title>

followed by:

OK to delete?

This is to ensure that the test is the correct one.

Reply 'Y' to delete the test, else 'N' will leave it intact.

If 'Y' was entered, the message:

TEST HAS BEEN DELETED

will appear on the screen.

Option 3 - LIST tests

Using this option it is possible to print or display a list of the tests available and to print/display the whole of any one test.

The first prompt is:

OUTPUT TO PRINTER?

Reply 'Y' to print the list of tests, otherwise reply 'N' to display the list on the screen.

NOTE: If the printer is chosen the list will still be displayed on the screen at the same time.

After the list has been printed or displayed there is the option to see a complete individual test:

Do you want to see a test?

Replying 'Y':

Which test to see?

Enter the number of the test you wish to see. If an invalid number is entered a message will be displayed - if it is OK the next prompt is:

Do you want to print the test?

Reply 'Y' to get a printout of the test else 'N' to see it displayed on the screen.

NOTE: The test will be printed question by question with each question simply printed as a list of 33 numbered lines.

Option 4 - EDIT tests

Option 4 allows tests to be edited either on a line by line basis or entering the whole question.

The first prompt is:

Which test to edit?

Enter the number of the test to be edited.

If the test does not exist then a suitable error message will be displayed, otherwise the title of the test is displayed for confirmation, with the prompt:

Press RETURN to continue

If you do not wish to proceed with editing the test enter 'E'.

After pressing RETURN:

Which question to be edited?

This can be any question from 1 to 20. The contents of the question will be displayed in two stages. If the question has not been entered yet, blank lines will be displayed. Press RETURN to end the editing session and return to the menu.

Enter the whole question?

If the reply is 'Y' then the whole question can be entered. This enables new questions to be added to or replace existing ones. If only certain lines in an existing question are to be changed reply 'N'.

The procedure for entering the whole question is the same as that described in Option 1.

When amending some lines only:

Which line to change?

Enter the line number to change or press RETURN to finish editing that question.

The existing line will be displayed on the screen, then:

Now enter new line

The new line can now be entered and you will then be returned to the line number prompt.

After all the required lines have been amended or the whole question has been entered the question number prompt will reappear. If more editing is to be done, enter the question number, otherwise press RETURN to return to the menu.

FEUTEST TEACHER'S GUIDE

Introduction

The program FEUTEST is the program which is run to perform the objective tests set up by Lecturers in the FEU Computer Literacy project. It allows up to 30 students to take a test (one by one) and will then give a list of their scores in graded order.

The program needs to be initiated by the Lecturer and can then be left running until the final student has taken the test. Afterwards the scores obtained by all the students can be displayed and/or printed.

Some Conventions

ESCAPE - The ESCAPE key will take you to the end from any state in the program

COLOURS - Certain colours signify different things:

YELLOW is used for all prompts
CYAN shows normal output from the computer
MAGENTA shows options which can be chosen
GREEN shows a correct response to a question
RED is used for error messages
WHITE appears for all user input

TO CONTINUE - at many stages in the program the prompt

PRESS RETURN TO CONTINUE

will appear. This happens so that data can be viewed on the screen before the program continues. At this stage it is possible to end the test for one student by entering 'E' (for exit).

Running the Program

STAGE 1

The first part is run by the teacher.

Enter:

```
CHAIN "FEUTEST"<return>
```

The screen will clear and the following will appear:

```
THIS IS THE FEU COMPUTER TESTER

Here is a list of the tests available:

1......       (a list of the test titles
2......       (will be displayed
3......

Which test to perform?
```

Enter the number of the test to be taken by the students. The computer can now be left to the students to take the test.

STAGE 2

This part is run by the student.

The screen clears, then:

```
WELCOME TO THE FEU COMPUTER TEST

First, what is your name?
```

The student enters his/her name and the questions then begin. After each question has been answered the student can either press the RETURN key to go on to the next question or enter 'E' to finish the test.

After the student has finished the test their score will be displayed, eg:

```
Your score was 6 out of a total of 10 questions
That gives a mark of 60%
```

```
Press RETURN to continue?
```

When the student presses RETURN the screen clears and then displays?

```
THANK YOU FOR TAKING THE TEST

BYE FOR NOW

NEXT STUDENT PLEASE


Press RETURN to continue?
```

Pressing the RETURN key takes you back to the prompt for the student's name. If the final student has taken the test, reply 'E' to proceed to the scores list.

STAGE 3

This stage is run by the teacher.

The final stage gives a list of students' scores sorted into order.

The screen displays the message:

```
STUDENT SCORES


Output to printer?
```

Reply 'Y' for a printed copy of the scores else reply 'N' to see them displayed on the screen.

After the scores have been output the program ends.

CHAPTER 5

RESOURCES

5.1 This chapter aims to give sufficient information for classroom teachers/workshop trainers to know what equipment they need in order to implement Computer Literacy Modules. It should give teachers/trainers a basis for negotiation with their managements, who will have been provided with Resource Information in Part I of this Report. This chapter also cross references with Chapter 4, where certain resources will have been described in greater detail.

Hardware Resources

5.2.1 The student to machine ratio recommended is at worst 1 work station (keyboard, computer, V.D.U.) to 2 persons. There is some evidence that validating/funding bodies are requesting a 1:1 student to work station ratio. 2 persons to 1 work station can be used advantageously in that the two persons can support each other in the learning process.

5.2.2 In evaluating the hardware for use with computer literacy courses, the project team has needed to balance four separate dimensions:

a) The minimum requirement from the equipment used has been to allow the student to achieve confidence in operating standard computing devices and to simulate the use of the computer in a working environment.
In practice this has meant that at the bottom end of the computer market the Sinclair ZX81, although an extremely low-cost machine and one which can be used to achieve some computer literacy objectives, would not generally be recommended as the computer on which to base a course. It is marketed for home use.

b) It is not usually possible for a college proposing to mount computer literacy courses to invest in high-cost computing equipment such as would be required for high-level specialist computing work. Because of this, computers evaluated have been mainly confined to the low cost microcomputer market, except where colleges have transferred or extended the use of already existing hardware.

c) Many colleges will wish to teach computer literacy using hardware already available to them rather than investing in new computer facilities. During the piloting of F.E.U. computer literacy schemes of selected colleges, a variety of different hardware configurations have been used as a basis for courses. This point has also been borne in mind during the design of software and course materials, which have been made as flexible as possible.

d) The speed at which computer technology develops calls for a continual monitoring of the types of computer available for these courses and the facilities which they offer. The project team is in touch with the market-place in educational computing and will continue to evaluate relevant developments in both hardware and software.

Bearing all the above points in mind, the most suitable computer for the project has been found to be the BBC micro, with its related equipment and devices. The Sinclair Spectrum, which was marketed during the period of the project, is also recommended, although with reservations about the robustness of the keyboard. Courses have also been run satisfactorily on a variety of other computers, including RML 380 and 480Z's, Commodore Pets and Heath Zenith Z89's.

5.2.3 The following BBC Machine configuation is recommended as a possible best buy. All costs quoted are approximate, as quoted in July 1983, and will vary from supplier to supplier:

Single Work station - The BBC Microcomputer

	CASSETTE BASED	DISC BASED
BBC Model B	399	469
Colour Monitor	287	287
Cassette Recorder/Player	30	
100k Single Disc Drive		265
Microline Printer	300	300
Total	1016	1321

Economies on software purchases, disc units & printers can be made by having single disc units and printers networked to microcomputers using the ECONET system. There has not yet been an opportunity to evaluate this system due to unavailability.

Prices are as follows:

8 station ECONET System	£8946

includes:

Terminator and power supply,
Clock and power supply,
Cable, sockets and plug connectors,
2 disc units,
Teletext receiver,
Printer,
800K Dual Disc Drive (30 track).

10 Stations	£1131
15 Stations	£10617

Further information is available from

Acorn Computers Ltd,
Fulbown Road,
Cherry Hinton,
Cambridge,
CB1 4JN

Tel (0223) 245200

Additional hardware items required for Core modules

	£
Big Trak (Toy) Tank M & B	29

(obtainable from W H Smith/Boots)

BBC Buggy	164

(low cost robotic/graphics device)

obtainable from:

Economatics Ltd.,
Education Division,
4 Orgreave Crescent,
Dore House Industrial Estate,
Handsworth,
Sheffield,
S13 9NQ

Tel: (0742) 690801

Access to Prestel/Teletext:

To keep costs down it is recommended that Colleges invest in centralised PRESTEL facilities in libraries or that a Teletext demonstration is arranged through a local T.V. shop.

Additional hardware items required for non-core models

	£
POWERTRAN Robot Arms	from 150 to 1100

obtainable from:

Powertran Cybernetics,
Portway Industrial Estate,
Andover,
Hants,
SP10 3WN

BBC Experiment Board 1 Traffic Lights

(Design available from Glos CAT)

		£
PRESTEL	Adaptors	225
or		
TELETEXT		103.50

Software Resources

5.3.1 During the course of the project, involvement with software has taken two forms:

a) developing purpose built software to support computer literacy courses, and

b) evaluating commercially produced educational software for its suitability for the courses developed. These are dealt with in turn.

Software development

5.3.2 Programs have been written in BASIC to run on the BBC microcomputer, although they may be easily converted for other machines. They have been concentrated in three main areas:

(i) Introductory programs
(These are intended to help the student in his first familiarisation with the use of a computer);

(ii) Applications software
(These programs introduce the students to the role played by the computer in business, industry and other settings);

(iii) Computerised check-tests
(It was found that most students enjoyed being assessed

using computerised question-and-answer sessions and were capable of learning through this activity).

This software is documented in Chapter 4 of this part of the Report. A limited cassette copying service will be available for BBC Micro users. Details of this service will be available from late August 1983 from:

The FEU Computer Literacy Project Office,
Gloucestershire College of Art & Technology,
The Christchurch Centre,
Gloucester Road,
Cheltenham,
GL51 8PB

Recommended Commercially Produced Educational Software

5.3.3 Software has been obtained from the following sources:

(i) specialist computer magazines,

(ii) computer manufacturers,

(iii) computer user groups,

(iv) M.E.P.,

(v) other users/colleges.

A very limited amount of such software is useful for Computer Literacy courses. A good proportion of currently available software is for Computer Assisted Learning which is distinct from Computer Literacy. Software which has been found to be appropriate is referenced in Section 4.

A minimum set of this software would comprise:		Cost £
WORDWISE	(Word Processing Package)	39
BEEBCALC	(Financial Spreadsheet)	34
VU-FILE	(Data base)	14.95

These packages are available in ROM chip form or Cassette form from Gemini Marketing Ltd, 18a Littleham Road, Exmouth, Devon EX8 1QG (BEEBCALC), Computer Concepts, 16 Wayside, Chipperfield,

Herts WD 9JJ (WORDWISE) and BBC Software, Psion Ltd,
2 Huntsworth Mews, Gloucester Place, London NW1 6DD.
(VU-FILE)

Audio Visual Resources

5.4.1 The major A.V. resources recommended are video recordings of selections from the BBC T.V. Series

The Computer Programme
Making the Most of the Micro
Managing the Micro

These are documented fully in COMPUTERFAX, a BBC/OPEN UNIVERSITY newspaper publication.
Selectivity is vital here and appropriate selections from these series are documented fully in Chapter 4 of this part of the Report. Access to video playback facilities in the Computer Literacy room is recommended.

5.4.2 Slides are the other main A.V. resource. Glos CAT have produced a set of slides of local applications. It is recommended that other users of the scheme do the same since the local flavour of applications will provide motivational impact. An alternative is to use selections from the PRISMATRON slide/tape series £300.

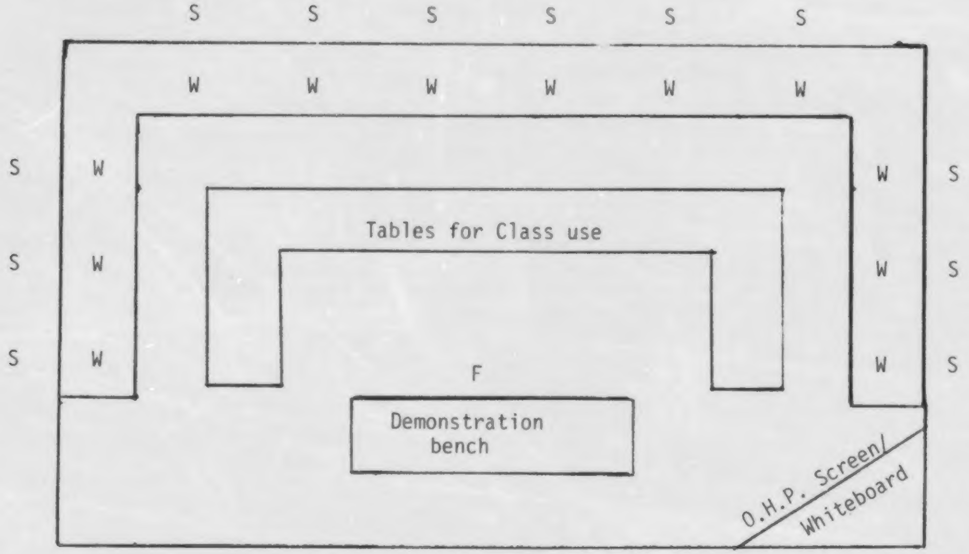
5.4.3 An overhead projector is a necessity for teaching Computer Literacy. Some modules specifically require O.H.P. use.
A white board is preferable to a blackboard in the Computer Literacy room.

5.4.4 A further necessary visual aid is a microscope and chip. (Microscopes can be borrowed from Science Departments).

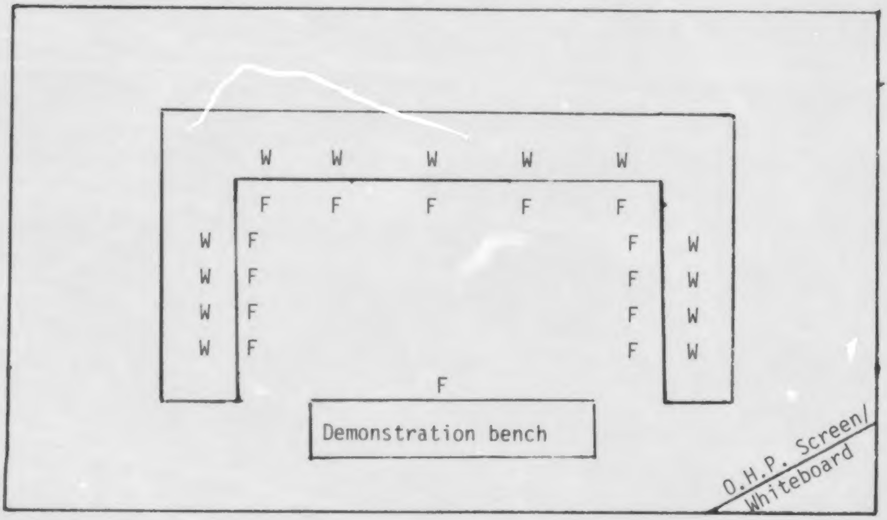
Accommodation

5.5 A dedicated room is a necessary prerequisite for the implementation of Computer Literacy Courses. The above Hardware and A.V. resources should all be permanently available in the room, which should have a ring main – ideally with floor sockets. Two alternative layouts which have proved successful are shown in the following diagrams:

S denotes 3 pin wall socket


S S S S S S
W W W W W W
S W
S W
S W
W S
W S
W S
Tables for Class use
F
Demonstration bench
O.H.P. Screen/ Whiteboard

F denotes 3 pin floor socket


W W W W W
F F F F F
W F
W F
W F
W F
F W
F W
F W
F W
F
Demonstration bench
O.H.P. Screen/ Whiteboard

Security is an ever present concern. Three successful modes are:

(i) alarm lock fitted to door and windows of room which is only unlocked when staff are present;

(ii) loop alarm system used with open access arrangements;

(iii) normal locks but grills fitted over doors and windows. Room only used under staff supervision.

Staff Resources

5.6 Teaching staff requirements are documented fully in Part A of the Report and it is assumed that the reader of this part will have those recommended characteristics and staff development opportunities. Technician staff support is an essential requirement given that Computer Literacy Teaching staff are not expected to be computer specialists. It is recommended that each Computer Literacy teaching room is staffed by a technician. The role of the technician is as follows:

(i) to keep equipment in running order and to make arrangements for repair and maintenance;

(ii) to maintain a software library;

(iii) To preload software for the teacher when appropriate; and

(iv) to give technical assistance to the teacher in the classroom.

Recommendations for Management provision of this support are made in Section A of the Report.

5.7 Supporting resources include a collection of computer based items such as Kimball tags, bar coded objects, slips from cash machines. A collection of appropriate magazines and posters will help to create a motivating and informative environment.

Appropriate magazines are:

- BBC User
- Acorn User
- Micro Decision

IT82 and M E P have proved useful sources of posters.

CHAPTER 6

CLASS MANAGEMENT STRATEGIES

Class Management Strategies

6.1 In common with many other agencies making recommendations on current approaches to teaching and learning it is the view to be expressed here that the achievement of students/trainees can best be maximised by.

(i) starting from the individual needs of the student/trainee

(ii) providing active, participatory, experiential learning opportunities

(iii) relating these activities firmly to the contemporary experience of the students and their aspirations for the future.

(iv) having teachers with a range of interpersonal and group dynamic skills who are also seen to be well aware of the world outside education/training

6.2 It is hoped that the materials provided in this guide will assist in providing some of these conditions. To achieve the best results teachers should aim to provide pace, direction and autonomy for their students. There may appear to be a paradox here, a conflict between direction and autonomy. Autonomy must be prepared for, students must be provided with the individual learning skills that will enable them to be independen They must also practise this independence in learning. The course material provide many instances of structured activities designed for individual or small group performance. Indeed it is recommended that there is a period of individual or small group work included in every module and that teacher exposition to the group is kept at a minimum. The purpose of these activities is not only the achievement of the course objectives but also the development of autonomy in the student. Projects which serve to integrate various modules provide greater freedom for individual action, and is it in these that the student becomes more responsible for his/her own learning.

6.3 The strategy of providing structured activities for individual students serves another purpose, that of allowing the teacher to interact on a one-to-one basis with the students. This face to face contact is vital for a number of reasons. It provides time for counselling, assessment, reinforcement, remedial help, etc.

A survey of class management problems and effective responses

6.4 Staff testing the materials developed during this study were given a questionnaire with the aim of determining what were the causes of any class management problems and how they could be dealt with. The findings can be summarised as follows:

6.4.1 Problem Sources. The respondents were asked if certain conditions existed within their teaching groups and the extent to which they caused a problem, and also to state any other problem sources. Problem sources included:

(i) a wide range of student motivation. This was considered to be a significant problem area. It was also noted that a low level of motivation caused most problems.

(ii) insufficient hardware. This reflects both group size and college facilities, and was considered a significant problem wherever it occurred.

(iii) a wide range of student ability. This was not found in most groups but, where it existed, was considered a problem, particularly in Work Introduction Courses.

(iv) insufficient software. This was sometimes seen as a problem particularly in the earlier responses, but later it appears to have reduced in its siginificance.

(v) a lack of technical support. This again reflects the particular college arrangements and, where it existed was considered to be the most significant problem area.

(vi) a wide range of previous experience of computing. With the exception of only one group, students were not found to differ much in this respect and indeed they all had very little previous experience.

(vii) other problem areas. In this category, large class size and lack of space were cited as causing problems. These obviously link with insuffucient hardware, but also create problems of their own.

6.4.2 Responses to Problems. Before considering approaches to these problems, it would be useful to consider the answers given to the question "What is the most important thing to be borne in mind if students are to achieve the objectives of this course?" These responses give a clear indication of the overall teaching strategy necessary for the success of this course: "The tutor must relate to students as individuals and identify their individual aims in relation to the course." This accent on individual development is to be found in virtually all the responses. "Students must be provided with a clear statement of individually achievable objectives and by reaching them gain motivation and a sense of achievement". "From the start the course must relate clearly to the individual vocational aspirations, experience and interests of the students." "Every opportunity must be provided for 'hands on' activity with the machines, not only for the performance of required tasks but to allow students to develop their own ideas and extend their abilities."

Strategies outlined for tackling problems were all designed to maximise both the individual contact between tutor and students and the amount of time spent by the students in individual and/or small group activities. The problem of limited hardware availability can be alleviated by certain management strategies such as sharing and split group rotation but there is a minimum level of equipment and of effective technician support which must be available. The sharing of computers as a means of dealing with a particular level of resources can be an effective strategy. The advantages of doing this are:

(i) students who lack confidence can be helped by working together

(ii) students can be paired so that the more able can help the less able. This help can be in the use of the hardware and/or in the interpretation of instructions given.

(iii) the teacher is available to give help where and when it is needed - the number of places needing help is halved.

However, there are disadvantages:

(i) in pairs one student may do all the work

(ii) one student may distract the other

(iii) the responsibility for completing a set task is halved

(iv) there is insufficient activity to keep up the pace of learning

The provision of alternative activities, one half based upon machine use and the other not, is another strategy which can be employed. The guide provides many examples of activities which can be undertaken.

Examples of specific management strategies

6.5 Examples of class management strategies are given for Modules C4 and D2; the time allocated for each is one hour but, as can be seen, could easily be longer. The strategy for C4 requires private study by the student to complete the task and the D2 strategy involves reinforcement stopping within the time available.

Module C4 'Writing a Program'

Situational Constraints

Students - 15; range of ability - 6 at least are capable of writing 15-20 line programs but 4 will have difficulty and lack confidence

Hardware - 8 microcomputers, cassette backing storage

Time - 1 hour

Lesson Strategy

INTRODUCTION Review of vocabulary and relevant concepts from previous modules

Divide class into 2 groups - the more able and better motivated to use microcomputers to run VTEST (page 378) and record scores. Other group - use question and answer to revise previous knowledge of programs. 10 minutes

DEVELOPMENT To enable student to achieve objectives stated

(1) To total group -
- (i) set objective - to write, run and store a program
- (ii) review features of program - use WS19 (page 129) to look at an example of a program - ask group what it does - conclude with diagram:
  - INPUT - person's name
  - PROCESS - find date of birthday for that name
  - OUTPUT - print date of birthday
- (iii) indicate to group that the meanings of certain BASIC commands are given on WS19
- (iv) set task given in WS19 10 minutes

(2) In pairs - Pair students according to similar ability so that groups will *not* finish together. Pairs can rearrange program statements using the microcomputer. When the program runs successfully they can list it and copy it down or

print it. (Flow-chart optional)

Teacher (and technician if available) provide individual help. 15-20 minutes

(3) To each pair - As pairs complete task - check completion and set programming task. The 6 best students should finish first, set them a task from WS22 (page 133) - this to be done individually. Less able students set WS20 (page 131) and allow the least confident to work in pairs.

(4) To each individual - 10 minutes before end - check stage reached.

CONCLUSION To check progress and prepare for next stage

To whole group - Ensure that results of WS19 (page 129) task are stored in folder and student progress log is completed. Ensure all students KNOW that they are to complete programming task by specified time.

DEMONSTRATION - load MEET (page 40) (Students have seen it before)

LIST MEET - show program statements, change one or two statements and RUN to show changes.

Stress easy to change programs - perhaps mention computer crime.

This demonstration can be used at any suitable time in lesson - or left out if time does not permit.

NOTE: This lesson could last considerably longer than 1 hour; if the group can use micrcomputers during the lunch break then completion of task can be expected before next lesson.

Module D2 'Using a Business Package'

Situational Constraints

Students - 15; wide range of ability

Hardware - 6 microcomputers

Time - 1 hour

Lesson Strategy (Note this is based on the use of STOCK, (page 209); WS32 (page 173) contains a detailed strategy for CUSTSYS)

INTRODUCTION Brief review of previous vocabulary and business applications as a whole group but pick only 3 or 4 key words - no more than 5 minutes. Briefly, set objective for lesson to use STOCK package in a model business environment.

DEVELOPMENT To set up model situation and use STOCK PROGRAM

Pre-lesson Preparation

(i) Create and load at least 5 product files - see WS33 (page 177) for information required.

(ii) Prepare a list of the day's sales of each of 5 products above - ensure at least 2 will require re-ordering, and sales information slips.

(iii) Prepare a list of product changes, eg. price/reorder level/suppliers address and a changes slip

N.B. It would be better if 3 alternative lists of daily sales sheets and product changes could be produced.

(i) To total group - Set task - in groups of three students - and set roles:

(i) Stock controller - display files and write a list of item number and description. Then respond to sales and product change messages

(ii) Sales clerk - fill in sales slip for each item and pass to stock controller

	(iii) Product changes clerk - fill in changes slip for each stock item and pass to stock controller
(2) To each group -	Check progress in task and change roles until all students have played the roles or time limit is reached. Then set task to group to write down the ways in which this system could be improved in a real situation - at least 3 ways.
(3) To total group -	Review total performance, identify any problems/ failures in system. Each group presents its 3 improvements. Individuals record activity in student progress log.
CONCLUSION	Review lesson - reinforce changes in system, and convenience of computer system - link to improvements needed in model system.

CHAPTER 7

THE USE OF THESE MATERIALS FOR STAFF TRAINING

The use of these materials for Staff Training

7.1 Part 1 of this report contains recommendations on staff development but it was considered appropriate here to include a statement on the use of the materials provided in this guide for staff development/training.

7.2 There is a need to provide staff training in computer literacy both in order to start to prepare staff for teaching in this area and to ensure that other basic skills teachers are computer literate. The latter is an important condition which needs to be satisfied if computer literacy is to be properly integrated into basic skills teaching. It is an important presumption here that all basic skills teachers must be aware of and able to take advantage of the techniques and resources of other teaching areas. In this connection the reader is referred to FEU Project RP56 Staff Development on Microcomputers which will contain relevant materials and recommendations.

7.3 What will be provided here is a description of a course provided to create a level of computer literacy which would allow the individuals to make appropriate decisions about their future training needs in computing. It would also introduce staff to the essential elements of the course, the materials used and teaching strategies employed.

A COMPUTER LITERACY STAFF DEVELOPMENT COURSE

TIME ALLOCATION	TOPIC AND KEY POINTS	MODULES/WORKSHEETS/STRATEGY
15 mins	What is Computer Literacy	Module A1 - exposition and use of O.H.T.
20-30 mins	Elements of a Computer System Input, Processing Output, Memory and Control. Backing Store, Software, Hardware	Modules B1 and B6 Worksheets 3, 4, 8 Exposition and group questions
50-60 mins	Operating a Microcomputer Load, run and respond to software from backing storage - tape or disc	Module B2 Worksheet 5 Individual hands-on experience using written instructions
15-20 mins	What is a program and why? The need for clear sequenced instructions to control the computer	Module C1 Worksheets 14 and 16 Exposition, demonstration of human robot-match exercise or programable tank
60 mins	Hands on Programming Input simple programs to show what computer can do. Individuals write own program or amend one	Module C1 and C4 Worksheet 17 Worksheets 19, 20, 22 and perhaps 27 and 28 Demonstration of how to correct a line of a program and then individual practice
15-30 mins	Sizes of Computers and some Applications Slides of applications and types. Visit to mainframe/mini installation	Modules B4, I1, D1, F1 Brief exposition with slides and perhaps video and then tour of computer facilities
15 mins	Applications areas Commercial, office, industrial and educational applications. Building on the core.	Modules D1, E2, F1, G1 Exposition as introduction to software packages

TIME ALLOCATION	TOPIC AND KEY POINTS	MODULES/WORKSHEETS/STRATEGY
90-120mins	Hands on the Packages (i) Stock Control - STOCK (ii) Word Processing-WORDWISE (iii)Microelectronic control - ROBOT and TANK (iv) Optimisation of materials-GLASSOP (v) Computer Based Testing - VTESTS, EDITOR, FEUTEST	Module D4 WS33 E1 WS34 E3/4 WS36, 39 Module F2 WS16 Module F2 WS40 Modules Z Assessment (see program documentation pages) Strategy - Small groups rotate around hands-on demonstrations
20 mins	Social Implications Impact upon employment opportunities. Computer Crime. Security of personal information.	Modules H1, H2, H3 Brief exposition and then a discussion.
30 mins	OPEN FORUM To consider questions and make plans for future training needs	

CHAPTER 8

PROJECT MAINTENANCE

8.1 It is anticipated that the materials in this report will give the classroom teacher the opportunity to implement a Computer Literacy Scheme which reflects the state of the technology and its applicability as at Summer 1983. The project team is fully aware that Information Technology is developing rapidly and that the teaching scheme will need continual updating to reflect new applications,and implications of the developments in Information Technology. There is a market explosion of software and additional hardware associated with the BBC microcomputer. Some of this will affect Computer Literacy Courses. The project software will need maintenance and enhancement and a more efficient method of distributing software to F.E. Colleges and Training Agencies will be required.

8.2 To answer the need for continuing development a maintenance phase * of this project will be implemented from September 1983. The maintenance team will:

(i) Evaluate new software and hardware,
(ii) Monitor existing project software,
(iii) Communicate changes to users via module update sheets,
(iv) Run a limited software cassette copying service,
(v) Investigate and implement a method of distributing software to users electronically, eg. MICRONET.

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* FEU Project RP 168.

The project team will be organising seminars for providers and teachers on a regular basis:

For further information please write to:

FEU Computer Literacy Project Technician
The Christchurch Centre
Gloucester Road
Cheltenham
GL51 8PB

APPENDIX A

PROGRAM LISTINGS

(Note that to use one of these programs you will need a stored version available on tape or disc. Otherwise, it will be necessary to type the program in at a computer and test and store it before the lesson in which it is to be used.)

Program	Page
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PROGRAM BUDGET

```
>LIST
   10 REM   BUDGETING PROGRAM
   20 REM
   30 REM   By Stephen Lewis
   40 REM
   50 DIM E(5)
   60 MODE7
   70 PRINTCHR$130;CHR$141;TAB(10)"BUDGET PROGRAM"
   80 PRINTCHR$130;CHR$141;TAB(10)"BUDGET PROGRAM"''
   90 PRINT"How much money do you earn"
  100 PRINT"each week ";:INPUT T1%
  110 IF T1%>100 THEN PRINT''"That's too much!":W=INKEY(300):GOTO 60
  120 PRINT ''"How much do you spend on the following:"
  130 FOR I%=1 TO 5:READ T$
  140 F%=0:PRINT'T$;:INPUT E(I%)
  150 PROCcheck(E(I%))
  160 IF F%=1 THEN 140
  170 NEXT
  180 MODE4
  190 PROCgraph
  200 FOR I%=1 TO 5
  210 PROCbar(E(I%),150*I%+50)
  220 NEXT
  230 PROCbar(T1%,950)
  240 END
  250 DEF PROCgraph
  260 FOR J%=0 TO 25 STEP 5
  270 PRINTTAB(0,J%+3);100-4*J%:NEXT
  280 MOVE 100,925:DRAW 100,100
  290 DRAW 1200,100
  300 FOR J%=100 TO 920 STEP 40
  310 MOVE 100,J%:DRAW 108,J%:NEXT
  320PRINTTAB(14,1)"BUDGET PROGRAM";
  330 PRINTTAB(1,1)"Pounds";
  340 PRINTTAB(6,31);"Rent";TAB(10,30);"Food";TAB(14,31);"Clothes";
  350PRINTTAB(21,30)"Ent";TAB(25,31)"Tran";TAB(30,30)"Bal"
  360 ENDPROC
  370
  380
  390 DEF PROCbar(H%,P%)
  400 H%=H%*8+100
  410 FOR T%=100 TO H% STEP 4
  420 MOVE P%,T%:DRAW P%+100,T%
  430 NEXT
  440 ENDPROC
  450
  460 DEF PROCcheck(N%)
  470 IF N%<0 THEN F%=1:ENDPROC
  480 T1%=T1%-N%:IF T1%>=0 THEN ENDPROC
  490 PRINT "You do not have that much money !":W=INKEY(300)
  500 T1%=T1%+N%:F%=1:ENDPROC
  510
  520 DATA Rent,Food,Clothes,Entertainment,Transport
```

PROGRAM CLASSFILE

```
 10REM-***CLASSFILE***
 20REM
 30REM-***Dimension array to hold user's details (Max.=15 records)***
 40DIM A$(15),B$(15),R$(15),PL$(15),X$(15)
 50REM-***Set mode ****
 60MODE 4
 70REM-***T$ is the horizontal line***
 80T$=STRING$(40,"_")
 90REM-***Clear screen and print introduction***
100CLS
110PRINT TAB(13,3)"CLASSFILE"
120PRINT TAB(13)"_________"
130PRINT
140PRINT:PRINT "This program lets you type names,"
150PRINT:PRINT "dates of birth and addresses and"
160PRINT:PRINT "then prints them out in alphabetic"
170PRINT:PRINT "order."
180PRINT:
190REM-***Accept class name***
200PRINT:PRINT:PRINT "To start, type in the name of your"
210PRINT:PRINT "class and press the RETURN key."
220PRINT
230INPUT "Your class is...."ID$
240IF ID$="" THEN ID$="CLASS RECORDS"
250REM-***Set record number***
260G=1
270REM-***Clear screen and accept name***
280CLS
290PRINT T$
300PRINT "Please type in your full name:"
310PRINT:INPUT"Name : "N$
320IF N$="" THEN GOTO 300
330REM-***Separate name into first name and surname***
340N=LEN(N$)
350L=INSTR(N$," ")
360B$(G)=RIGHT$(N$,N-L)
370IF INSTR(B$(G)," ")<>0 THEN L=L+INSTR(B$(G)," "):GOTO 360
380R$(G)=LEFT$(N$,L)
390X$(G)=B$(G)
400PRINT
410REM-***Draw line***
420PRINT T$
430REM-***Accept and validate date of birth***
440PRINT "Type your date of birth in like this :"
445PRINT
450PRINT TAB(5)"23-JUN-62  or  2-AUG-45"
460PRINT:INPUT"Your date of birth is..."A$
470IF LEN(A$)<9 THEN A$="0"+A$
480REM-***Z$=Months***
490Z$="JANFEBMARAPRMAYJUNJULAUGSEPOCTNOVDEC"
500REM-***Validate Day***
510D$=LEFT$(A$,2)
520DY=VAL(D$)
530 IF DY>31 THEN PRINT "Wrong Day":GOTO 440
540REM-***Validate Month***
545 MN=0
550MN$=MID$(A$,4,3)
560FOR I=1 TO 12
570IF MN$=MID$(Z$,((I-1)*3+1),3) THEN MN=I
580NEXT I
```

```
 590IF MN<1 OR MN>12 THEN PRINT "Wrong Month":GOTO 440
 600REM-***Validate Day (Jun-Sept-Apr-Nov)***
0 610IF DY>30 AND (MN=9 OR MN=4 OR MN=6 OR MN=11) THEN PRINT "Wrong Day":GOTO 44
 620REM-***Validate Year***
 630YR$=MID$(A$,8,2)
 640IF MID$(YR$,1,1)="-" THEN YR$=MID$(A$,9,2)
 650YR=VAL(YR$)
 660IF YR>82 OR YR<1 THEN PRINT "Wrong Year":GOTO 440
 670REM-***Validate Day (Feb)***
 680IF YR MOD 4 =0 AND MN=2 AND DY>29 THEN PRINT "Wrong Day":GOTO 440
 690IF YR MOD 4 <>0 AND MN=2 AND DY>28 THEN PRINT "Wrong Day":GOTO 440
 700A$(G)=A$
 710PRINT
 720REM-***Draw a line***
 730PRINT T$
 740REM-***Clear address store and counter***
 750PL$="":C=0
 760REM-***Accept the address***
 770PRINT "You have 3 lines to type your address on"
 780PRINT
 790FOR I=1 TO 3
 800PRINT "Line ";I;":- ";
 810INPUT LINE " "AD$
 820REM-***Store the first 40 letters of the address***
 830M=LEN(AD$)
 840IF C+M<41 THEN C=C+M+1:PL$=PL$+" "+AD$
 850NEXT I
 860PL$(G)=PL$
 870REM-***Check for full file***
 880IF G>14 THEN GOTO 970
 890REM-***Draw line***
 900PRINT T$
 910REM-***Ask for more data?***
 920PRINT "Are there more people to put on"
 930PRINT "the class file? ";
 940INPUT " "Z$
 950IF Z$="Y" OR Z$="YES" OR Z$="y" OR Z$="yes" OR Z$="Yes" THEN G=G+1:GOTO 280
 952REM-***Check for lenght of record***
 953IF G=1 THEN GOTO 1060
 960REM-***Sort Surnames Alphabetically***
 970FOR K=1 TO G-1
 980FOR L=K+1 TO G
 990IF X$(L)>=X$(K) THEN GOTO 1030
1000TMP$=X$(L)
1010X$(L)=X$(K)
1020X$(K)=TMP$
1030NEXT L
1040NEXT K
1050REM-***Clear screen and print class name***
1060CLS
1070PRINT TAB(10);ID$
1080PRINT
1090REM-***Print headings***
1100PRINT T$
1110PRINT "  Name                    Date Of Birth"
1115PRINT "  And Address"
1120PRINT T$
1140REM-***Loop to order printout***
1150FOR O=1 TO G
```

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```
1160REM-***Loop to search for record***
1170FOR J=1 TO G
1180REM-***Compare Surnames***
1190IF X$(Q)<>B$(J) THEN NEXT J
1200REM-***Take 20 letters of full name***
1210DR$=B$(J)+","+R$(J)
1220DR$=LEFT$(DR$,20)
1230REM-***Print record***
1240PRINT DR$;TAB(21);A$(J)
1250PRINT PL$(J)
1260PRINT T$
1270REM-***Clear surname - for same surname records****
1280B$(J)=""
1290NEXT Q
1300REM-***To end****
1310PRINT "Bye - bye"
1330END
```

PROGRAM CLOCKCARD

```
  5REM***FEU PROJECT - CCFE,1982***
  7REM***MODULE A ***
  8CLS
 10PRINT"CLOCK CARD PROGRAM":PRINT
 20PRINT"TYPE IN NAME"
 30PRINT
 40INPUTN$
 50PRINT
 60PRINT"TYPE IN HOURLY RATE"
 70PRINT
 80INPUT R
 90PRINT
100PRINT"TYPE IN NO.OF HOURS WORKED"
110PRINT
120INPUT H
130LET W= R*H
132PRINT:PRINT:PRINT
140PRINT"NAME",N$
150PRINT:PRINT
158PRINT"GROSS"
160PRINT"PAY","'";W
170END
```

PRINT-OUT OF VDU DISPLAY

```
>CLOCK CARD PROGRAM

TYPE IN NAME

 BRIAN MIDDLETON

TYPE IN HOURLY RATE

?1.35

TYPE IN NO.OF HOURS WORKED

?35.5


NAME        BRIAN MIDDLETON


GROSS
PAY         '47.925
```

PROGRAM CUSTSYS

```
 10DIM A$(10,9)
 20 P=1:X=0:R$="0000000000"
 30 CLS:PRINT TAB(10,3)"CUSTOMER ACCOUNTS"
 40 PRINT TAB(10,4)"-----------------"
 50PRINT TAB(5,7)"Do you want to:"
 60PRINT TAB(9,9)"1. Start a new account"
 70PRINT TAB(9)"2. Look at an account"
 80 PRINT TAB(9)"3. Delete an account"
 90PRINT TAB(9)"4. Quit the program"
100PRINT TAB(5,16)"Answer (1-4)";
110INPUT" "Z
120 IF Z<1 OR Z>4 THEN PRINT TAB(17,16)"     ":GOTO 100
130 IF Z=4 THEN END
140 IF Z=1 THEN GOTO 180
150 IF Z=2 THEN GOTO 760
160 IF Z=3 THEN GOTO 1210
170 END
180CLS
190PRINTTAB(10)"NEW ACCOUNT"
200PRINTTAB(10)"-----------"
210PRINT
220 FOR J=1 TO 10
230  IF MID$(R$,J,1)="0" THEN P=J:H=9:J=10
240 NEXT J
250 IF H=9 THEN GOTO 270
260 GOTO 720
270PRINT"Account No.";TAB(15);
280INPUT" "A$(P,1)
290 IF LEN(A$(P,1))<>3 THEN PRINT "Must have 3 figures":GOTO 270
300 D=VAL(A$(P,1))
310 IF D<1 OR D>999 THEN PRINT"Must be no. between 1 and 999":GOTO 270
320PRINT
330 R$=LEFT$(R$,P-1)+"1"+MID$(R$,P+1)
340PRINT"Account Name";TAB(15);
350INPUT LINE " "A$(P,2)
360IF LEN(A$(P,2))>25 THEN PRINT "Too long":GOTO 340
370IF LEN(A$(P,2))<3 THEN PRINT "Must have customer's name":GOTO 340
380PRINT
390 FOR I=3 TO 5
400 IF I=3 THEN PRINT"Address";:ELSE PRINTTAB(7);
410 PRINT"(line ";I-2;")";
420PRINTTAB(15);
430 INPUT LINE" "A$(P,I)
440 IF LEN(A$(P,3))<3 THEN PRINT"Must have customer's address":GOTO 400
450 IF LEN(A$(P,I))>25 THEN PRINT "Too long":GOTO 400
460 NEXT I
470 PRINT
480 PRINT "Postcode";TAB(15);
490 INPUT " "A$(P,6)
500 IF LEN(A$(P,6))>8 THEN PRINT "Too long":GOTO 480
510PRINT
520PRINT "Customer type ";
530INPUT " "A$(P,7)
540IF LEN(A$(P,7))<1 THEN PRINT "Must have some description":GOTO 520
550IF LEN(A$(P,7))>[illegible] THEN PRINT "Type is too long":GOTO 520
560PRINT
570PRINT "Credit limits:"
580PRINT
590PRINT" Time (Months)";
600INPUT" "A$(P,8)
```

```
610IF VAL(A$(P,8))>3 THEN PRINT "Must be 1,2 or 3":GOTO 590
620IF VAL(A$(P,8))<1 THEN PRINT "Usual value = 1 Month":A$(P,8)="1"
630PRINT "  Value (£'s)  ";
640INPUT" "A$(P,9)
650IF VAL(A$(P,9))>999.99 THEN PRINT "Must be less than 1000":GOTO 630
660IF VAL(A$(P,9))<1 THEN PRINT "Usual value = £100":A$(P,9)="100"
670 PRINT "More new accounts? (YES/NO)"
680 INPUT " "Z$
690 IF Z$="NO" OR Z$="N" THEN GOTO 30
700 IF Z$<>"YES" AND Z$<>"Y" THEN GOTO 670
710 IF P<11 THEN GOTO 180
720 PRINT"Files full":PRINT"Press Return"
730 INPUT " "Z$
740 GOTO 30
750 END
760CLS
770PRINT TAB(10,3)"ACCOUNT DISPLAY"
780PRINT TAB(10)"---------------"
790GOSUB 930
800IF X=10 THEN X=0:GOTO 860
810 PRINT:PRINT "Customer Type  "A$(I,7)
820 PRINT:PRINT"Credit limits:"
830 PRINT " Time (Months) "A$(I,8)
840 PRINT " Value         £"A$(I,9)
850 PRINT
860 PRINT "Do you want to look at another account ?"
870 PRINT "Answer YES or NO : ";
880 INPUT " "Z$
890 IF Z$="YES" OR Z$="Y" THEN GOTO 760
900 IF Z$="NO" OR Z$="N" THEN GOTO 30
910 GOTO 860
920 END
930PRINT TAB(7,7)"Do you want the account by:"
940PRINT TAB(12,9)"1. Account No."
950PRINTTAB(18,11)"or"
960PRINT TAB(12,13)"2. Account Name"
970PRINT TAB(10,15)"Answer 1 or 2 : ";
980 INPUT " "Z
990IF Z<>1 AND Z<>2 THEN PRINT TAB(25,15)"     ":GOTO 970
1000 CLS
1010IF Z=1 THEN 1050
1020 PRINT TAB(3,3)"What is the name ? ";
1030INPUT"  "IN$
1040 Q=2:GOTO 1080
1050 PRINT TAB(3,3)"What is the account number ? ";
1060 INPUT" "IN$
1070 Q=1
1080FOR I=1 TO 10
1090 IF IN$=A$(I,Q) THEN GOTO 1140
1100NEXT I
1110PRINT:PRINT"FILE NOT FOUND":PRINT
1120X=10
1130RETURN
1140 PRINT:PRINT "Account No.     ";A$(I,1)
1150 PRINT:PRINT "Account Name    "A$(I,2)
1160 PRINT:PRINT "Address(line 1)"A$(I,3)
1170 PRINT "        (line 2)"A$(I,4)
1180 PRINT "        (line 3)"A$(I,5)
1190 PRINT "Postcode        "A$(I,6)
1200 GOTO 1130
```

```
 1210CLS
 1220PRINT TAB(10,3)"ACCOUNT CLEARANCE"
 1230PRINT TAB(10)"-----------------"
 1240GOSUB 930
 1250IF X=10 THEN X=0:GOTO 1360
 1260PRINT
 1270PRINT "Do you want to delete this account?"
 1280 PRINT "Answer YES or NO : ";
 1290INPUT " "Z$
 1300IF Z$="NO" OR Z$="N" THEN GOTO 1360
 1310IF Z$<>"YES" AND Z$<>"Y" THEN 1270
 1320FOR J=1 TO 9
 1330A$(I,J)=""
 1340NEXT J
 1350 R$=LEFT$(R$,(I-1))+"0"+RIGHT$(R$,(10-I))
 1360 PRINT
 1370 PRINT "Do you want to delete another account?"
 1380 PRINT "Answer YES or NO : ";
 1390 INPUT " "Z$
 1400 IF Z$="N" OR Z$="NO" THEN GOTO 30
 1410 IF Z$<>"YES" AND Z$<>"Y" THEN GOTO 1360
 1420 IF R$="000000000" THEN PRINT "EMPTY FILES":PRINT "Press RETURN ":INPUT
" "Z$:GOTO 30
 1430 GOTO 1210
```

PROGRAM EDITOR

```
  10 REM OBJECTIVE TEST EDITOR
  20 REM FOR FEU COMPUTER LITERACY PROJECT
  22 REM WRITTEN AT SOUTHGATE TECHNICAL COLLEGE
  30 REM WRITTEN BY PHILIP KARSTADT. 17/5/83
  40 REM LAST EDITED 22/6/83
  42
  43 REM INITIALISATION
  44
  50 DIM TITLE$(10),Q LINE$(33)
  55 ON ERROR GOTO 9000
  56 MODE 7
  60 PROCinit
  70 PROCload index
  97
  98 REM MAIN PROGRAM
  99
 100 CLS
 110 PRINT RED$;BACKGROUND$;TAB(10);CYAN$;"OBJECTIVE TEST EDITOR"
 130 VDU 28,0,24,39,2
 140 CLS:PRINT CYAN$;"Options are:":PRINT
 150 PRINT MAGENTA$;"   1...CREATE a new test"
 160 PRINT MAGENTA$;"   2...DELETE a test"
 162 PRINT MAGENTA$;"   3...LIST the tests"
 164 PRINT MAGENTA$;"   4...EDIT a test"
 170 PRINT MAGENTA$;"   5...EXIT"
 190 option$ = FNreply("Option ")
 200 option% = VAL(option$)
 210 IF option%=1 THEN PROCcreate:GOTO 140
 220 IF option%=2 THEN PROCdelete:GOTO 140
 222 IF option%=3 THEN PROClist:GOTO 140
 224 IF option%=4 THEN PROCedit:GOTO 140
 230 IF option%=5 THEN 900
 240 PROCerror("PLEASE ENTER A NUMBER BETWEEN 1 AND 5")
 250 GOTO 140
 900 IF NOT CHANGES% THEN 950
 910 X = OPENOUT "TESTIDX"
 920 FOR I% = 1 TO 10
 922   PRINT £X, TITLE$(I%)
 930 NEXT
 940 CLOSE£X
 950 VDU 26: CLS
 960 PRINT CYAN$;"END OF EDITOR PROGRAM"
 980 END
 997
 998
 999
1000 DEF PROCinit
1002 BLEEP$ = CHR$(7)
1010 RED$=CHR$(129):GREEN$=CHR$(130)
1011 YELLOW$=CHR$(131):BLUE$=CHR$(132)
1012 MAGENTA$=CHR$(133):CYAN$=CHR$(134)
1013 WHITE$=CHR$(135):FLASH ON$=CHR$(136)
1014 FLASH OFF$=CHR$(137)
1015 BACKGROUND$ = CHR$(157)
1020 CHANGES% = FALSE
1030 eof% = FALSE
1040 *FX 5,2
1041 *FX 6,0
1042 *FX 8,4
```

```
1090 ENDPROC
1097
1098
1099
1100 DEF PROCdouble(S$)
1102 REM Prints S$ in double size
1110 LOCAL i%
1120 FOR i% = 0 TO 1
1130   PRINT CHR$(141);S$
1140 NEXT
1190 ENDPROC
1197
1198
1199
1200 DEF PROCerror(E$)
1202 REM Prints error message E$
1210 PRINT BLEEP$;
1220 PRINTTAB(0,20); RED$:FLASH_ON$:E$;
1230 PRINT FLASH_OFF$;
1240 PROCcontinue
1250 PRINTTAB(0,20); SPC(40);
1290 ENDPROC
1297
1298
1299
1300 DEF PROCload index
1310 X = OPENIN "TESTIDX"
1320 IF X<>0 THEN 1400
1330 X = OPENOUT "TESTIDX"
1340 FOR I%=1 TO 10
1350   PRINT£X. " ":TITLE$(I%)=" "
1360 NEXT
1370 CLOSE£X
1380 GOTO 1490
1400 FOR I%=1 TO 10
1410   INPUT£X, TITLE$(I%)
1420 NEXT
1430 CLOSE£X
1490 ENDPROC
1497
1498
1499
1500 DEF FNyesno(PROMPT$)
1502 LOCAL r$
1520 r$ = FNreply(PROMPT$)
1540 IF r$="YES" OR r$="yes" OR r$="Y" OR r$="y" THEN r$="YES":GOTO 1580
1550 IF r$="NO" OR r$="no" OR r$="N" OR r$="n" THEN r$="NO":GOTO 1580
1560 PROCerror("PLEASE REPLY YES OR NO")
1570 GOTO 1520
1580 = r$
1597
1598
1599
1600 DEF FNreply(QUESTION$)
1602 LOCAL r1$
1610 PRINTTAB(0,18); SPC(40);
1620 PRINTTAB(0,18); YELLOW$;QUESTION$;WHITE$;
1630 INPUT r1$
1690 = r1$
1697
```

```
1698
1699
1700 DEF PROCaddQ(S$)
1710 QL% = QL% + 1
1720 Q LINE$(QL%) = S$
1790 ENDPROC
1797
1798
1799
1900 DEF PROCcontinue
1910 PRINTTAB(0,21); YELLOW$;"Press RETURN to continue ";WHITE$;
1920 INPUT X$
1922 IF X$ = "E" OR X$ = "e" THEN eof%=TRUE
1930 PRINTTAB(0,21); SPC(40);
1990 ENDPROC
1997
1998
1999
2000 DEF PROCcreate
2002 CLS:PRINT CYAN$;"CREATE A TEST"
2004 PRINT CYAN$;"============="
2010 FOR I%=1 TO 20
2020   IF TITLE$(I%)=" " THEN 2070
2030 NEXT
2040 PROCerror("NO MORE ROOM IN THE INDEX")
2050 GOTO 2990
2070 PRINTTAB(0,4); CYAN$;"Creating Test Number ";I%
2080 TEST FILE$ = "TEST" + STR$(I%)
2090 TF = OPENOUT TEST FILE$
2091 IF TF=0 THEN PROCerror("ERROR CREATING TEST FILE"):GOTO 2990
2092 pointer%=PTR£TF
2093 start% = pointer%
2094 FOR Q%=1 TO 20
2095   FOR L%=1 TO 33:PTR£TF=pointer%:PRINT£TF," ":pointer%=pointer%+40:NEXT L%
2096 NEXT Q%
2098 pointer% = start%
2100 PRINTTAB(0,8); YELLOW$;"Enter the Title of the Test:";WHITE$
2108 eof% = FALSE
2110 INPUT LINE L$
2120 TITLE$(I%) = L$
2130 PRINT
2140 Q% = 0
2150 REPEAT
2151   CLS
2152   Q% = Q% + 1
2160   QL% = 0
2162   FOR I%=1 TO 33:Q LINE$(I%)="":NEXT I%
2170   PRINT CYAN$;"Question Number ";Q%
2180   PRINT
2190   PRINT YELLOW$;"Enter the question"
2192   PRINT YELLOW$;"(10 lines, EX  to end)"
2200   FOR I% = 1 TO 10
2210     PRINT YELLOW$;STR$(I%);WHITE$;
2220     INPUT LINE L$
2222     IF LEN(L$) <= 38 THEN 2230
2224     PROCerror("LINE MUST BE LESS THAN 38 CHARACTERS")
2226     GOTO 2210
2230     IF L$="EX" OR L$="ex" THEN I%=10:GOTO 2250
2240     PROCaddQ(L$):I1%=I%+1
2250   NEXT I%
```

```
2260   IF I1%>10 THEN 2270
2262   FOR J%=I1% TO 10:PROCaddQ(""):NEXT J%
2270   CLS
2280   PRINT YELLOW$:"Now enter the responses:"
2290   FOR I% = 1 TO 5
2300     PRINT YELLOW$;CHR$(I%+64);WHITE$;
2310     INPUT LINE L$
2312     IF LEN(L$) <= 36 THEN 2320
2314     PROCerror("LINE MUST BE LESS THAN 36 CHARACTERS")
2316     GOTO 2300
2320     PROCaddQ(L$)
2330   NEXT I%
2350   c$ = FNreply("Correct response ")
2360   IF LEN(c$) <> 1 THEN 2372
2365   I9% = INSTR("ABCDEabcde",c$)
2370   IF I9%<>0 THEN 2380
2372   PROCerror("PLEASE ENTER A,B,C,D OR E")
2374   GOTO 2350
2380   IF I9%>5 THEN c$=CHR$(59+I9%)
2400   PROCaddQ(c$)
2402   CLS
2410   PRINT YELLOW$:"Now enter the explanation"
2420   PRINT YELLOW$:"(17 lines. 'EX' to end)"
2430   FOR I%=1 TO 17
2440     PRINT YELLOW$:STR$(I%):WHITE$;
2450     INPUT LINE L$
2452     IF LEN(L$) <= 38 THEN 2460
2454     PROCerror("LINE MUST BE LESS THAN 38 CHARACTERS")
2456     GOTO 2440
2460     IF L$="EX" OR L$="ex" THEN I%=17:GOTO 2480
2470     PROCaddQ(L$):I1%=I%+1
2480   NEXT I%
2490   IF I1%>10 THEN 2500
2492   FOR J%=I1% TO 17:PROCaddQ(""):NEXT J%
2500   CLS
2502   IF FNyesno("Question OK ")="NO" THEN 2160
2510   FOR QL%=1 TO 33
2520     PTR£TF = pointer%
2530     PRINT£TF. Q LINE$(QL%)
2540     pointer% = pointer% + 40
2548   NEXT QL%
2549   IF option%=4 THEN RETURN
2550   reply$ = FNyesno("Any more questions")
2560 UNTIL reply$ = "NO"
2570 CLOSE£TF
2580 CHANGES% = TRUE
2990 ENDPROC
2997
2998
2999
3000 DEF PROCdelete
3010 CLS:PRINT CYAN$:"DELETE A TEST"
3020 PRINT CYAN$:"============="
3040 T$ = FNreply("Which test to delete ")
3050 T% = VAL(T$)
3060 IF T%>=1 AND T%<=10 THEN 3090
3070 PROCerror("MUST BE BETWEEN 1 AND 10")
3080 GOTO 3040
3090 IF TITLE$(T%)<>" " THEN 3130
3100 PROCerror("THAT TEST DOESN'T EXIST !!")
```

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```
3110 GOTO 3900
3130 PRINTTAB(0,4): CYAN$:"Test is:"
3140 PRINT:PRINT TITLE$(T%)
3150 IF FNyesno("OK to delete ") = "NO" THEN PROCerror("TEST NOT DELETED"):GOTO
3900
3160 ON T% GOTO 3170,3180,3190,3200,3210,3220,3230,3240,3250,3260
3170 *DELETE "TEST1"
3172 GOTO 3300
3180 *DELETE "TEST2"
3182 GOTO 3300
3190 *DELETE "TEST3"
3192 GOTO 3300
3200 *DELETE "TEST4"
3202 GOTO 3300
3210 *DELETE "TEST5"
3212 GOTO 3300
3220 *DELETE "TEST6"
3222 GOTO 3300
3230 *DELETE "TEST7"
3232 GOTO 3300
3240 *DELETE "TEST8"
3242 GOTO 3300
3250 *DELETE "TEST9"
3252 GOTO 3300
3260 *DELETE "TEST10"
3300 TITLE$(T%) = " "
3310 PROCerror("TEST HAS BEEN DELETED")
3320 CHANGES% = TRUE
3900
3990 ENDPROC
3997
3998
3999
4000 DEF PROClist
4010 CLS:PRINT CYAN$:"LIST THE TESTS"
4020 PRINT CYAN$;"=============="
4040 IF FNyesno("OUTPUT TO PRINTER")="YES" THEN VDU 2
4042 PRINTTAB(0,4);
4050 FOR I% = 1 TO 10
4060   IF TITLE$(I%) = " " THEN 4090
4070   PRINT STR$(I%);" ";TITLE$(I%)
4090 NEXT I%
4100 VDU 3
4110 IF FNyesno("Do you want to see a test ") = "NO" THEN 4990
4120 T$ = FNreply("Which test to see ")
4130 T% = VAL(T$)
4132 IF T%=0 THEN 4990
4140 TEST FILE$ = "TEST"+STR$(T%)
4150 TF = OPENIN TEST FILE$
4160 IF TF<>0 THEN 4200
4170 PROCerror("THAT TEST DOESN'T EXIST")
4180 GOTO 4120
4200 pointer%=0
4202 QL%=0:Q%=1
4204 IF FNyesno("Do you want to print the test ")="YES" THEN VDU 2
4205 CLS
4206 PRINT "QUESTION ";STR$(Q%)
4208 eof% = FALSE
4210 REPEAT
4212   QL%=QL%+1
```

```
4214   IF QL%>33 THEN QL%=1:Q%=Q%+1:PRINT:PRINT:PRINT "QUESTION ";STR$(Q%)
4220   PTR£TF=pointer%
4230   INPUT£TF, L$
4232   IF L$=" " AND QL%=1 THEN eof%=TRUE:GOTO 4260
4240   PRINT STR$(QL%);" ";L$
4250   pointer% = pointer% + 40
4260 UNTIL EOF£TF OR eof%
4270 CLOSE£TF
4272 PRINT "*** END ***"
4274 VDU 3
4276 PRINT:PRINT
4280 PROCcontinue
4990 ENDPROC
4997
4998
4999
5000 DEF PROCedit
5002 CLS:PRINT CYAN$;"EDIT A TEST"
5004 PRINT CYAN$;"==========="
5006 eof%=FALSE
5010 T$ = FNreply("Which test to edit ")
5020 T% = VAL(T$)
5022 IF T% = 0 THEN 5990
5030 IF T%>=1 AND T%<=20 THEN 5060
5040 PROCerror("MUST BE BETWEEN 1 AND 20")
5050 GOTO 5010
5060 IF TITLE$(T%)<>" " THEN 5100
5070 PROCerror("THAT TEST DOESN'T EXIST !!")
5080 GOTO 5010
5100 PRINTTAB(0,2); CYAN$;"Test is:"
5110 PRINT TITLE$(T%)
5112 PROCcontinue
5114 IF eof% THEN 5990
5120 TEST_FILE$ = "TEST" + STR$(T%)
5122 TF = OPENIN TEST_FILE$
5130 CLS
5132 Q$ = FNreply("Which question to be edited ")
5140 Q% = VAL(Q$)
5142 IF Q%=0 THEN 5900
5150 IF Q%>=1 AND Q%<=20 THEN 5180
5160 PROCerror("PLEASE ENTER A NUMBER 1 TO 20")
5170 GOTO 5130
5180 pointer%=((Q%-1)*33)*40
5182 start% = pointer%
5190 FOR QL%=1 TO 33
5200   PTR£TF = pointer%
5210   INPUT£TF, Q_LINE$(QL%)
5220   pointer% = pointer% + 40
5230 NEXT
5240 CLS: PRINT CYAN$;"The question is:":PRINT
5250 FOR I%=1 TO 16:PRINT CYAN$;STR$(I%);WHITE$;Q_LINE$(I%):NEXT
5260 PROCcontinue:CLS
5270 FOR I%=17 TO 33:PRINT CYAN$;STR$(I%);WHITE$;Q_LINE$(I%):NEXT
5280 IF FNyesno("Enter the whole question ") ="NO" THEN 5290
5282 pointer%=start%:CLS
5284 GOSUB 2160:GOTO 5130
5290 L$ = FNreply("Which line to change ")
5300 L% = VAL(L$)
5302 IF L%=0 THEN 5500
5310 IF L%>=1 AND L%<=33 THEN 5350
```

```
5320 PROCerror("PLEASE ENTER A NUMBER 1 TO 33")
5330 GOTO 5290
5350 CLS
5352 IF L%<11 OR L%>15 THEN MAX_L%=36 ELSE MAX_L% = 36
5360 PRINTTAB(0,4); CYAN$;"Line currently is:"
5370 PRINT Q_LINE$(L%)
5380 PRINT:PRINT
5390 PRINT YELLOW$;"Now enter new line ";WHITE$;
5400 PRINT
5410 INPUT LINE L$
5420 IF LEN(L$)<=MAX_L% THEN 5450
5430 PROCerror("LINE MUST BE LESS THAN "+STR$(MAX_L%)+" CHARACTERS")
5440 GOTO 5390
5450 Q_LINE$(L%) = L$
5460 GOTO 5290
5500 pointer% = start%
5510 FOR QL%=1 TO 33
5520   PTR£TF = pointer%
5530   PRINT£TF, Q_LINE$(QL%)
5540   pointer% = pointer% + 40
5550 NEXT
5560 GOTO 5130
5900 CLOSE£TF
5990 ENDPROC
5997
5998
5999
9000 REM *****  ERROR ROUTINE  *****
9001 VDU 3:CLOSE£TF
9002 IF ERR=17 THEN 140
9004 CLS
9010 ERR_MES$ = "ERROR "+STR$(ERR)+" AT LINE "+STR$(ERL)
9020 PROCerror(ERR_MES$)
9030 PRINTTAB(0,8);:REPORT
9040 PRINTTAB(0,10);RED$;FLASH_ON$;"CLOSING FILES";FLASH_OFF$;
9060 X=OPENOUT "TESTIDX"
9070 FOR I%=1 TO 10:PRINT£X,TITLE$(I%):NEXT
9080 CLOSE£X
9090 GOTO 140
9097
9098
9099
9999 END
```

PROGRAM FEUTEST

```
  10 REM COMPUTER TESTER PROGRAM
  20 REM FOR FEU COMPUTER LITERACY PROJECT
  22 REM WRITTEN AT SOUTHGATE TECHNICAL COLLEGE
  30 REM WRITTEN BY PHILIP KARSTADT, 18/5/83
  40 REM LAST EDITED 23/6/83
  43
  44
  50 DIM TITLE$(10),Q_LINE$(33)
  51 DIM STUDENT$(30),ST_SCORES%(30)
  52
  53 REM INITIALISATION
  54
  55 ON ERROR GOTO 9000
  60 PROCinit
  70 PROCload_index
  97
  98 REM MAIN PROGRAM
  99
 100 CLS
 110 PRINT RED$;BACKGROUND$;TAB(12);CYAN$;"COMPUTER TESTER"
 122 VDU 28,0,24,39,2
 130 PRINT CYAN$;"THIS IS THE FEU COMPUTER TESTER":PRINT
 140 PRINT CYAN$;"Here is a list of the tests available:"
 142 PRINT
 150 FOR T% = 1 TO 10
 160   IF TITLE$(T%)=" " THEN 180
 170   PRINT MAGENTA$;STR$(T%);" ";TITLE$(T%)
 180 NEXT
 200 T$ = FNreply("Which test to perform ")
 210 T% = VAL(T$)
 212 IF T%=0 THEN 910
 220 IF T%>=1 AND T%<=10 THEN 250
 230 PROCerror("PLEASE ENTER A NUMBER 1 TO 10")
 240 GOTO 200
 250 IF TITLE$(T%)<>" " THEN 300
 260 PROCerror("THAT TEST DOESN'T EXIST !")
 270 GOTO 200
 300 CLS:PRINT CYAN$;"WELCOME TO THE FEU COMPUTER TEST":PRINT
 310 PROCstuname
 320 PROCtest(T%)
 330 CLS:PRINT CYAN$;"THANK YOU FOR TAKING THE TEST"
 340 PRINT:PRINT CYAN$;"BYE FOR NOW"
 350 PRINT:PRINT CYAN$;"NEXT STUDENT PLEASE"
 352 eof%=FALSE
 360 PROCcontinue
 362 IF eof% THEN 900
 370 CLS: GOTO 300
 900 PROCprintscores
 910 VDU 26: CLS
 920 PRINT CYAN$;"END OF FEUTEST"
 930 PRINT:PRINT CYAN$;"BYE FOR NOW"
 990 END
 997
 998
 999
1000 DEF PROCinit
1002 BLEEP$ = CHR$(7)
1010 RED$=CHR$(129):GREEN$=CHR$(130)
1011 YELLOW$=CHR$(131):BLUE$=CHR$(132)
```

```
1012 MAGENTA$=CHR$(133):CYAN$=CHR$(134)
1013 WHITE$=CHR$(135):FLASH_ON$=CHR$(136)
1014 FLASH_OFF$=CHR$(137)
1015 BACKGROUND$=CHR$(157)
1020 CHANGES% = FALSE
1030 stuno% = 0
1032 FOR S%=1 TO 30:STUDENT$(S%)="":ST_SCORES%(S%)=0:NEXT
1040 eof%=FALSE
1090 ENDPROC
1097
1098
1099
1100 DEF PROCdouble(S$)
1102 REM Prints S$ in double size
1110 LOCAL i%
1120 FOR i% = 0 TO 1
1130   PRINT CHR$(141);S$
1140 NEXT
1190 ENDPROC
1197
1198
1199
1200 DEF PROCerror(E$)
1202 REM Prints error message E$
1210 PRINT BLEEP$;
1220 PRINTTAB(0,20); RED$;FLASH_ON$;E$;
1230 PRINT FLASH_OFF$
1240 PROCcontinue
1250 PRINTTAB(0,20); SPC(40);
1290 ENDPROC
1297
1298
1299
1300 DEF PROCload_index
1310 X = OPENIN "TESTIDX"
1320 IF X<>0 THEN 1400
1330 X = OPENOUT "TESTIDX"
1340 FOR I%=1 TO 20
1350   PRINT£X, " ":TITLE$(I%)=" "
1360 NEXT
1370 CLOSE£X
1380 GOTO 1490
1400 FOR I%=1 TO 10
1410   INPUT£X, TITLE$(I%)
1420 NEXT
1430 CLOSE£X
1490 ENDPROC
1497
1498
1499
1500 DEF FNyesno(PROMPT$)
1502 LOCAL r$
1520 r$ = FNreply(PROMPT$)
1540 IF r$="YES" OR r$="yes" OR r$="Y" OR r$="y" THEN r$="YES":GOTO 1580
1550 IF r$="NO" OR r$="no" OR r$="N" OR r$="n" THEN r$="NO":GOTO 1580
1560 PROCerror("PLEASE REPLY YES OR NO")
1570 GOTO 1520
1580 = r$
1597
1598
```

```
1599
1600 DEF FNreply(QUESTION$)
1602 LOCAL r1$
1610 PRINTTAB(0,18): SPC(40);
1620 PRINTTAB(0,18): YELLOW$;QUESTION$;WHITE$;
1630 INPUT r1$
1690 = r1$
1697
1698
1699
1900 DEF PROCcontinue
1910 PRINTTAB(0,21): YELLOW$;"Press RETURN to continue ";WHITE$;
1920 INPUT X$
1930 IF X$ = "E" THEN eof%=TRUE
1940 PRINTTAB(0,21): SPC(40);
1990 ENDPROC
1997
1998
1999
2000 DEF PROCtest(TEST%)
2010 eof% = FALSE:SCORE%=0:QUESTION%=0
2015 TEST FILE$ = "TEST" + STR$(TEST%)
2020 TF = OPENIN TEST FILE$
2022 POINTER% = PTR£TF
2024 IF TF <> 0 THEN 2030
2026 PROCerror("TEST CANNOT BE FOUND !")
2028 GOTO 2990
2030 REPEAT
2032   CLS
2040   FOR QL% = 1 TO 33
2042     PTR£TF = POINTER%
2050     INPUT£TF, Q LINE$(QL%)
2052     POINTER% = POINTER% + 40
2060   NEXT QL%
2062   IF Q LINE$(1)=" " THEN eof%=TRUE:GOTO 2380
2080   QUESTION% = QUESTION% + 1
2090   PRINT CYAN$;"Question ";STR$(QUESTION%)
2100   PRINT
2110   FOR QL% = 1 TO 10
2120     PRINT CYAN$;Q LINE$(QL%)
2130   NEXT QL%
2140   PRINT
2170   FOR QL% = 11 TO 15
2180     PRINT MAGENTA$;CHR$(QL%+54);") ";Q LINE$(QL%)
2190   NEXT QL%
2210   C$ = FNreply("Answer is ")
2230   IF LEN(C$) = 1 THEN 2260
2240   PROCerror("PLEASE REPLY A,B,C,D OR E")
2250   GOTO 2210
2260   IF INSTR("ABCDEabcde",C$)=0 THEN 2240
2270   IF C$<>Q LINE$(16) THEN 2300
2280   PRINTTAB(0,20); FLASH ON$;GREEN$;"THAT'S RIGHT !!";BLEEP$;FLASH OFF$;:PR
OCcontinue
2282   SCORE% = SCORE% + 1
2290   GOTO 2380
2300   PRINTTAB(0,19); FLASH ON$;RED$;"THAT'S THE WRONG ANSWER";BLEEP$;FLASH OF
F$
2302   PRINTTAB(0,20); GREEN$;"THE CORRECT ANSWER IS ";Q LINE$(16);
2304   PROCcontinue
2310   IF FNyesno("Do you want an explanation ") = "NO" THEN 2360
```

```
2312   CLS
2320   FOR QL% = 17 TO 33
2330     PRINT CYAN$;Q_LINE$(QL%)
2340   NEXT QL%
2350   PRINT
2360   PROCcontinue
2380 UNTIL EOF£TF OR eof%
2400 CLOSE£TF
2410 CLS
2420 PRINT CYAN$;"Your score was ";STR$(SCORE%)
2430 PRINT CYAN$;" out of a total of ";STR$(QUESTION%);" questions"
2440 percentage% = (SCORE%/QUESTION%)*100
2442 ST_SCORES%(stuno%)=percentage%
2450 PRINT CYAN$;"That gives a mark of ";STR$(percentage%);"%"
2460 PRINT:PRINT
2470 PROCcontinue
2990 ENDPROC
2997
2998
2999
3000 DEF PROCstuname
3010 stuname$=FNreply("First, what is your name ")
3012 IF stuname$="" THEN 3090
3020 stuno% = stuno% + 1
3030 STUDENT$(stuno%)=stuname$
3090 ENDPROC
3097
3098
3099
3100 DEF PROCprintscores
3110 CLS
3112 PRINTTAB(0,3);CYAN$;"STUDENT SCORES":PRINT
3120 I%=1
3130 REPEAT
3140   swapped%=FALSE
3150   FOR J%=1 TO stuno%-1
3160       IF ST_SCORES%(J%)>ST_SCORES%(J%+1) THEN 3200
3170       TEMP%=ST_SCORES%(J%)
3180       ST_SCORES%(J%)=ST_SCORES%(J%+1):ST_SCORES%(J%+1)=TEMP%
3190       TEMP$=STUDENT$(J%)
3192       STUDENT$(J%)=STUDENT$(J%+1):STUDENT$(J%+1)=TEMP$
3194       swapped%=TRUE
3200   NEXT J%
3210   I%=I%+1
3220 UNTIL I%>=stuno% OR NOT swapped%
3230 IF FNyesno("Output to printer ")="YES" THEN VDU 2
3240 PRINTTAB(0,4);
3250 FOR S%=1 TO stuno%
3260   PRINT STR$(S%);TAB(4);STUDENT$(S%);TAB(34);STR$(ST_SCORES%(S%))
3270 NEXT S%
3280 VDU 3
3282 PROCcontinue
3290 ENDPROC
3297
3298
3299
9000 REM *****  ERROR ROUTINE  *****
9002 CLOSE£TF
9004 IF ERR=17 THEN 9030
9010 IF ERL = 210 THEN 230
```

```
9020 PROCerror("AN ERROR HAS OCCURED")
9030 CLS:GOTO 300
9097
9098
9099
9999 END
>
```

PROGRAM GLASSOP

```
 10 REM ***************************
 20 REM ***  GLASS OPTIMISATION  ***
 30 REM ***  by Wayne Gardner    ***
 40 REM ***  GLOSc.a.t.          ***
 50 REM ***************************
 60 MODE7:*FX4,1
 70 PROCintro
 80 CLEAR
 90 DIM E(100),F(10),G(10),D(100),Q(100),AW(20),AX(20),AY(20)
100 MODE7
110 PRINT''"ENTER SIZE OF GLASS YOU ARE TO CUT FROM"
120 PRINT "( separate each number with■RETURN■)"
130 PRINT'TAB(10)"?";:A=FNinput(POS,VPOS,2,4):PRINT",";
140 IF A>1000 THEN PROCto_big(1000,1,7):GOTO 100
150 IF A<100 THEN PROCto_small(1,7):GOTO 100
160 B=FNinput(POS,VPOS,2,4):PRINT'
170 IF B>1000 THEN PROCto_big(1000,1,7):GOTO 100
180 IF B<100 THEN PROCto_small(1,7):GOTO 100
190 IF B<A THEN PROCwrong:GOTO 100
200 I=1
210 VDU28,3,22,35,8
220 @%=000003:T=0
230 PRINT I;". Enter the sizes ?";:D(I)=FNinput(POS,VPOS,0,4)
240 IF D(I)=0 THEN 370 ELSE IF D(I)>A THEN PROCto_big(A,1,VPOS+2):GOTO 350
250 IF D(I)<100 THEN PROCto_small(1,VPOS+2):GOTO 350
260 PRINT ",";:E(I)=FNinput(POS,VPOS,0,4):PRINT
270 IF E(I)<100 THEN PROCto_small(1,VPOS+2):GOTO 350
280 IF E(I)>B THEN PROCto_big(B,1,VPOS+2):GOTO 350
290 IF E(I)<D(I) THEN PROCwrong:GOTO 350
300 TA=D(I)*E(I)
310 T=T+TA
320 IF T>A*B THEN GOTO 1150
330 Q(I)=I
340 I=I+1
350 IF VPOS>10 THEN CLS
360 GOTO 230
370 C=I-1
380 FORK=1TOC-1
390 FORL=K+1TOC
400 IF D(L)<=D(K) THEN GOTO 500
410 W=D(L)
420 X=E(L)
430 Y=Q(L)
440 D(L)=D(K)
450 E(L)=E(K)
460 Q(L)=Q(K)
470 D(K)=W
480 E(K)=X
490 Q(K)=Y
500 NEXT L
510 NEXT K
520 MODE4
530 VDU19,0,4;0;19,1,7;0;
540 MOVE 0,0
550 DRAW 0,A
560 DRAW B,A
570 DRAW B,0
580 DRAW 0,0
590 Y=E(1)
600 H=0
```

```
 610 JJ=1
 620 I=1
 630 X=0
 640 K=0
 650 W=0
 660 W=W+D(I)
 670 IF W)A GOTO 1210
 680 MOVE 0,W
 690 DRAW B,W
 700 MOVE 0,W-10
 710 DRAW E(I),W-10
 720 PLOT 85,0,H
 730 MOVE E(I),W
 740 MOVE E(I),W-10
 750 DRAW E(I),K
 760 PLOT 85,0,H
 770 VDU 5
 780 MOVE E(I)/2,K+D(I)/2
 790 GCOL 0,0
 800 PRINT;Q(I)
 810 VDU 4
 820 GCOL 0,1
 830 K=K+D(I)
 840 I=I+1
 850 IF I)C THEN GOTO 1060
 860 Y=Y+E(I)
 870 IF Y)B THEN GOTO 1750
 880 Z=Y-E(I)
 890 PROCPRINT:GOTO 1940
 900 DEFPROCPRINT
 910 MOVE Z+10,D(I)+H-10
 920 DRAW Y,D(I)+H-10
 930 PLOT 85,Z+10,H
 940 MOVE Y,D(I)+H-10
 950 DRAW Y,X
 960 PLOT 85,Z+10,H
 970 VDU 5
 980 MOVE (Y+Z)/2,D(I)/2+H
 990 GCOL 0,0
 1000 PRINT;Q(I)
 1010 VDU 4
 1020 GCOL 0,1
 1030 ENDPROC
 1040 I=I+1
 1050 IF I(=C THEN GOTO 860
 1060 IF F(1))0 THEN 1290
 1070 GOTO 1340
 1080 Y=E(I)
 1090 H=W
 1100 X=K
 1110 GOTO 660
 1120 DEF PROCwrong
 1130 PRINT '"Please enter smallest dimension  first"':Wait=INKEY(300)
 1140 ENDPROC
 1150 PRINT ''"Your last entry has caused the"'"total  area of  your pieces to"'
'exceed the area  of your sheet"'"of glass"''"Press R to run  program or"'"Z to
retype your last entry"'
 1160 CHARIN=GET
 1170 IF CHARIN=82 OR CHARIN=114 THEN 370
 1180 IF CHARIN()90 AND CHARIN()122 THEN 1160
 1190 T=T-TA
 1200 GOTO 350
 1210 F(JJ)=D(I):G(JJ)=E(I):Q(JJ)=Q(I)
 1220 W=W-D(I)
 1230 JJ=JJ+1
 1240 I=I+1
 1250 Y=E(I)
 1260 IF I)C THEN 1280
 1270 GOTO 660
 1280 PRINT
 1290 VDU 28,32,31,39,1
 1300 PRINT"THERE ISNO ROOM ON THE  GLASS   FOR :"
 1310 FOR K=1TOJJ-1
 1320 PRINT TAB(9);Q(K):TAB(16);F(K);",":G(K)
 1330 NEXT K
 1340 GOTO 1680
 1350 DEF PROCto_small(Xpos%,Ypos%)
 1360 PRINTTAB(Xpos%,Ypos%)"Too small! Must be 100 or more":Wait=INKEY(300)
 1370 ENDPROC
 1380 DEF PROCto_big(Size%,Xpos%,Ypos%)
 1390 PRINTTAB(Xpos%,Ypos%)"Too big ! Must be ";Size%;" or less"':Wait=INKEY(300
)
 1400 ENDPROC
 1410 DEF PROCintro
 1420 CLS
 1430 S=132:CLS:PROCSCREENCOLOUR(S)
 1440 VDU23;8202;0;0;0;0
 1450 FORI%=0TO1:PRINT TAB(14,10+I%);CHR$131;CHR$(141);"G L A S S":NEXT
 1460 FORI%=0TO1:PRINT TAB(7,15+I%);CHR$131;CHR$(141);"O P T I M I S A T I O N":
NEXT
 1470 X=INKEY(500)
 1480 CLS
 1490 PRINT TAB(0,10):
 1500 PRINT"Do you want instructions (Y or N) ?";
 1510 CHARIN=GET
 1520 IF CHARIN=78 OR CHARIN=110 THEN CLS:ENDPROC
 1530 IF CHARIN()89 AND CHARIN()121 THEN 1510
 1540 CLS:PRINT"This program will show you where you cancut your small glass she
ets, on a largersheet, to give you minimum glass wastageand a fast  cutting time
. This is called           ■GLASS OPTIMISATION."
 1550 PRINT'"Firstly you are asked to  enter the sizeof the large  sheet of glas
s you want tocut from. The smallest dimension must beentered  first, and  must b
e between 100and 1000 units long."
 1560 PRINT'"Next you are asked to enter the  smallersheets of glass that you wa
nt to cut outof the large  sheet. Again the  smallestdimension  must  be  entere
d  first,";
 1570 PRINT" theminimum  dimension is 100 units, but themaximum depends on the s
ize of the largesheet."
 1580 PRINT'"If you  press RETURN when asked to ENTERSIZES?, the program will be
 run with thedata you have entered."
 1590 PRINT
 1600VDU3
 1610 PRINTTAB(7)"Press■SPACE BAR■to continue";:REPEATUNTILGET=32
 1620 GOTO 80
 1630 DEFPROCSCREENCOLOUR(S)
 1640 CLS:FOR I=1TO25
 1650 PRINT CHR$(S);CHR$157:NEXT I
 1660 ENDPROC
 1670 VDU 28,32,31,39,1
 1680 VDU 28,32,31,39,1
 1690 PRINT"          ANOTHER GO ?    (Y/N)?";
 1700 CHARIN=GET
 1710 IF CHARIN=89 OR CHARIN=121 THEN PRINT"YES":CLS:CLEAR:GOTO 80
 1720 IF CHARIN=78 OR CHARIN=110 THEN PRINT"NO":CLEAR:GOTO 1740
 1730 GOTO 1700
 1740 END
 1750 S=I
 1760 Z=Y-E(I)
 1770 I=I+1
 1780 IF I)C THEN I=S:GOTO 1080
 1790 Y=Z+E(I)
 1800 IF Y)B GOTO 1760
 1810 AW=E(I)
 1820 AX=D(I)
 1830 AY=Q(I)
 1840 FOR J=(I-1)TO S STEP -1
 1850 E(J+1)=E(J)
 1860 D(J+1)=D(J)
 1870 Q(J+1)=Q(J)
 1880 NEXT
 1890 E(S)=AW
 1900 D(S)=AX
 1910 Q(S)=AY
 1920 I=S
 1930 GOTO 880
 1940 BW=E(I):BX=W-(D(I)+H):ZZZ=Z:HH=H:YY=Y:XXX=X:CT=I
 1950 SC=I
 1960 IF I>=C THEN 2130
 1970 IF BW<E(I+1) OR BX<D(I+1) THEN I=I+1:GOTO 1960
 1980 I=I+1:AW=E(I):AX=D(I):AY=Q(I)
 1990 FOR J=(I-1)TO SC STEP -1
 2000 E(J+1)=E(J):D(J+1)=D(J):Q(J+1)=Q(J):NEXT
 2010 E(SC+1)=AW:D(SC+1)=AX:Q(SC+1)=AY:I=SC:ZZ=Z:H=D(I)+H:I=I+1:Y=Z+E(I):X=H:XX=
D(I)
 2020 PROCPRINT:CT=I
 2030 CW=BW-E(I):CX=D(I)
 2040 SC=I
 2050 IF I>=C THEN BX=BX-XX:I=CT:Z=ZZ:GOTO 1950
 2060 IF CW<E(I+1) OR CX<D(I+1) THEN I=I+1:GOTO 2050
 2070 I=I+1:AW=E(I):AX=D(I):AY=Q(I)
 2080 FOR J=(I-1) TO SC STEP-1
 2090 E(J+1)=E(J):D(J+1)=D(J):Q(J+1)=Q(J):NEXT
 2100 E(SC+1)=AW:D(SC+1)=AX:Q(SC+1)=AY:I=SC:Z=Y:I=I+1:Y=Z+E(I)
 2110 PROCPRINT:CT=I
 2120 CW=CW-E(I):CX=CX:GOTO 2040
 2130 I=CT:Z=ZZZ:H=HH:Y=YY:X=XXX:GOTO 1040
 2140
 2150 DEF FNinput(Xpos%,Ypos%,MIN%,MAX%)
 2160 LOCAL Q$,X$,A
 2170 PRINTTAB(Xpos%,Ypos%)SPCMAX%:PRINTTAB(Xpos%,Ypos%);:X$=""
 2180 Q$=GET$:A=ASC(Q$):IF A=13 THEN 2240
 2190 IF A=127 AND POS<=Xpos% THEN 2220
 2200 IF A=127 VDU127:X$=LEFT$(X$,LEN(X$)-1):GOTO 2180
 2210 IF A>47 AND A<58 THEN 2230
 2220 SOUND 1,-15,155,2:GOTO 2180
 2230 IF LEN(X$)>=MAX% THEN 2220 ELSE X$=X$+Q$:PRINT Q$;:GOTO 2180
 2240 IF LEN(X$)<MIN% THEN 2180 ELSE =VAL(X$)
```

PROGRAM HANGMAN

```
 10 REM-****HANGMAN****
 20 REM
 30 REM-***Dimension arrays to hold letters and words****
 40 DIM V$(25)
 50 DIM U$(25)
 60 DIM J$(100)
 70 REM-***Store words in data statement***
 80 DATA CASSETTE,LOAD,KEYBOARD,MAINFRAME,LASER,CHIP,MICROCOMPUTER,TELETEXT
 90 DATA LANGUAGE,HARDWARE,MAGNETIC,PROCESSOR,GRAPHICS,OPERATOR,DISK,BASIC
100 DATA COMMAND,STATEMENT,PRESTEL,PRINTER
110 REM-***Clear screen and set questioncounters***
120 CLS
130 MN=0:MX=0
140 REM-***K=number of words***
150 K=20
160 REM-***Print title***
170 PRINT "COMPUTER HANGMAN":PRINT:PRINT
180 REM-***Store Words in array***
190 FOR I=1 TO K
200 READ J$(I)
210 NEXT I
220 REM-***Choose starting position***
230 PRINT "Type in a number between 1 and ";K;" :"
240 INPUT " "A
250 A=INT(A)
260 IF A<1 OR A>K THEN GOTO 230
270 REM-***Store Word in working variable***
280 W$=J$(A)
290 REM-***Note lenght of word and check word exists***
300 N=LEN(W$)
310 IF N=0 THEN A=1:GOTO 280
320 REM-***Store letters and '-' in arrays***
330 FOR P=1 TO N
340 U$(P)="-"
350 V$(P)=MID$(W$,P,1)
360 NEXT P
370 REM-***Choose Mode***
380 MODE 4
390 REM-***Set up blue screen with white panel***
400 VDU 19,0,4,0,0,0
410 VDU 28,0,32,20,0
420 PLOT 4,750,0
430 PLOT 1,500,0
440 PLOT 81,0,1000
450 PLOT 1,-500,0
460 PLOT 81,0,-1000
470 GCOL 0,0
480 REM-***Print dashes for word****
490 PRINT TAB(0,4)"Your word is:"
500 K$=""
510 PRINT TAB(0,6);
520 FOR O=1 TO N
530 PRINT "-";
540 NEXT O
550 REM-***Set error counter***
560 B=1
570 REM-***Accept guess***
580 PRINT TAB(0,8)"Type in a letter or"
590 PRINT "a word ";
600 INPUT " ",Z$
```

```
 610 REM-***Is guess the whole word?***
 620 IF Z$=W$ THEN PRINT TAB(0,6);W$: GOTO 940
 630 REM-***Take first letter of guess and and to letters used***
 640 A$=LEFT$(Z$,1)
 650 K$=K$+A$
 660 REM-***Print letters used***
 670 PRINT TAB(0,21)"Letters used:"
 680 PRINT:PRINT K$
 690 REM-***Set right-letter flag***
 700 D=0
 710 REM-***Erase guess***
 720 PRINT TAB(8,9)"             "
 730 REM-***Put a right letter in U$ and set right letter flag***
 740 FOR P=1 TO N
 750 IF V$(P)=A$ THEN U$(P)=A$:D=1
 760 NEXT P
 770 REM-***Set Incomplete-word flag***
 780 C=0
 790 REM-***Wrong letter-goto error printout***
 800 IF D=0 THEN GOTO 1120
 810 REM-***Print letters guessed right so far***
 820 PRINT TAB(0,6);
 830 FOR P=1 TO N
 840 PRINT U$(P);
 850 IF U$(P)="-" THEN C=1
 860 NEXT P
 870 PRINT
 880 REM-***Is word complete?***
 890 IF C=0 THEN GOTO 940
 900 REM-***Next letter***
 910 GOTO 580
 920 END
 930 REM-***Winners Display****
 940 PRINT TAB(0,12)"You win,congratulations"
 950 REM-***Add one to words right counter***
 960 MX=MX+1
 970 REM-***Another Go?***
 980 PRINT:PRINT:PRINT "Want to play again?"
 990 PRINT:PRINT"If so,type Y  ";
1000 INPUT " ",Z$
1010 REM-***Add 1 to words tried counter***
1020 MN=MN+1
1030 REM-***Y=next word goto beginning***
1040 IF Z$="Y" THEN A=A+1:GOTO 260
1050 REM-***Clear screen and print score***
1060 CLG
1070 PRINT TAB(0,10)"You got ";MX;" out of ";MN;" questions right."
1080 PRINT TAB(0,30)"BYE"
1090 END
1100 REM-***WRONG LETTERS****
1110 REM-***Out of guesses?***
1120 IF B>8 THEN GOTO 1610
1130 REM-***Draw Hangman routines****
1140 ON B GOSUB 1190,1230,1270,1310,1350,1440,1480,1550
1150 REM-***Add to counter and go back for next guess****
1160 B=B+1
1170 GOTO 580
1180 REM-***Draw base***
1190 PLOT 4,780,100
1200 PLOT 1,450,0
1210 RETURN
1220 REM-***Draw upright****
```

```
1230 PLOT 4,1100,100
1240 PLOT 1,0,850
1250 RETURN
1260 REM-***Draw crossbar***
1270 PLOT 4,1100,950
1280 PLOT 1,-250,0
1290 RETURN
1300 REM-***Draw support***
1310 PLOT 4,1100,750
1320 PLOT 1,-150,200
1330 RETURN
1340 REM-***Draw rope and head***
1350 PLOT 4,900,950
1360 PLOT 1,0,-200
1370 PLOT 4,863,800
1380 PLOT 1,74,0
1390 PLOT 81,0,-74
1400 PLOT 1,-74,0
1410 PLOT 81,0,74
1420 RETURN
1430 REM-***Draw body***
1440 PLOT 4,900,750
1450 PLOT 1,0,-275
1460 RETURN
1470 REM-***Draw legs***
1480 PLOT 4,800,300
1490 PLOT 1,20,-20
1500 PLOT 1,80,195
1510 PLOT 1,80,-195
1520 PLOT 1,20,20
1530 RETURN
1540 REM-***Draw arms***
1550 PLOT 4,900,675
1560 PLOT 1,-100,-150
1570 PLOT 4,900,675
1580 PLOT 1,100,-150
1590 RETURN
1600 REM-***Loser's display***
1610 PRINT TAB(0,12)"Hard luck,I win"
1620 PRINT TAB(0,14)"The word was ";W$
1630 REM-***Ask about another go***
1640 GOTO 950
1650 END
```

PROGRAM LIGHTS

```
>LIST
   10 REM TRAFFIC LIGHTS
   20 REM By Nigel Hill (Glos CAT)
   30*TV 255
   40 MODE 2
   50 GCOL 0,1
   60 MOVE 0,280:MOVE 1279,280
   70 PLOT 85,0,0
   80 PLOT 85,1279,0
   90 MOVE 0,743:MOVE 1279,743
  100 PLOT 85,0,1023:PLOT 85,1279,1023
  110 GCOL 0,3
  120 MOVE 0,470:MOVE 1279,470
  130 PLOT 85,0,553:PLOT 85,1279,553
  140 VDU 5
  150 GCOL 0,5
  160 MOVE 350,700
  170 PRINT "GLOS Cat"
  180 MOVE 250,660
  190 PRINT "PRODUCTIONS"
  200 MOVE 350,620
  210 PRINT "PRESENTS"
  220 GCOL 0,2
  230 MOVE 170,410
  240 PRINT "TRAFFIC LIGHTS"
  250 COLOUR 1
  260 VDU 30
  270 FOR D=1 TO 5000:NEXT D
  280 VDU 4
  290 ?&FE62=&3F
  300 MODE 2
  310 VDU 24,0;0;1023;1023;
  320 VDU 28,17,31,17,0
  330 COLOUR 128:CLS
  340 GCOL 0,134:CLG
  350 GCOL 0,2
  360 MOVE 0,341:MOVE 341,341
  370 PLOT 85,0,0:PLOT 85,341,0
  380 MOVE 0,682:MOVE 341,682
  390 PLOT 85,0,1023:PLOT 85,341,1023
  400 MOVE 1023,341:MOVE 682,341
  410 PLOT 85,1023,0:PLOT 85,682,0
  420 MOVE 1023,682:MOVE 682,682
  430 PLOT 85,1023,1023:PLOT 85,682,1023
  440 GCOL 0,0
  450 MOVE 0,342:DRAW 342,342:DRAW 342,0
  460 MOVE 0,681:DRAW 342,681:DRAW 342,1023
  470 MOVE 1023,681:DRAW 681,681:DRAW 681,1023
  480 MOVE 1023,342:DRAW 681,342:DRAW 681,0
  490 GCOL 0,7
  500 MOVE 0,512:DRAW 315,512:DRAW 315,679
  510 MOVE 345,320:DRAW 512,320:DRAW 512,0
  520 MOVE 705,346:DRAW 705,512:DRAW 1023,512
  530 MOVE 678,700:DRAW 512,700:DRAW 512,1023
  540 VDU 23,240,0,0,16,56,56,16;0;
  550 GOSUB 1290
  560 GCOL 0,4
  570 MOVE 75,930:DRAW 125,930
```

```
 580 MOVE 100,880:DRAW 100,980
 590 MOVE 80,960:DRAW 100,980:DRAW 115,960
 600 VDU 5:MOVE 70,1010:PRINT CHR$(78)
 610 MOVE 0,940:PRINT CHR$(87)
 620 MOVE 130,940:PRINT CHR$(69)
 630 MOVE 70,870:PRINT CHR$(83)
 640 VDU 30:VDU 4
 650 GCOL 0,3
 660 MOVE 344,344:DRAW 344,678:DRAW 678,678:DRAW 678,344:DRAW 344,344
 670 DRAW 678,678:MOVE 678,344:DRAW 344,678
 680 MOVE 512,344:DRAW 344,512:DRAW 512,678:DRAW 678,512:DRAW 512,344
 690 MOVE 344,426:DRAW 598,678:DRAW 678,598:DRAW 426,344:DRAW 344,426
 700 MOVE 344,598:DRAW 426,678:DRAW 678,426:DRAW 598,344:DRAW 344,598
 710 DIM REDLOCX(4),REDLOCY(4)
 720 DIM YELLOCX(4),YELLOCY(4)
 730 DIM GRELOCX(4),GRELOCY(4)
 740 FOR A=1 TO 4
 750 READ REDLOCX(A),REDLOCY(A)
 760 READ YELLOCX(A),YELLOCY(A)
 770 READ GRELOCX(A),GRELOCY(A)
 780 NEXT A
 790 DATA 275,320,275,300,275,280
 800 DATA 700,320,730,320,760,320
 810 DATA 700,730,700,750,700,770
 820 DATA 275,725,245,725,215,725
 830REM INPUT AND STORE LIGHT PATTERNS
 840DIM NSD$(25),WED$(25),TD(25)
 850 K=0
 860INPUT "PATTERN FOR NS (R/RY/Y/G)" NS$:CLS
 870IF NS$="R" OR NS$="RY" OR NS$="Y" OR NS$="G" THEN 890
 880PRINT "YOU HAVE MADE A MISTAKE":GOSUB 1580:CLS:GOTO 860
 890INPUT "PATTERN FOR WE (R/RY/Y/G)" WE$:CLS
 900IF WE$="R" OR WE$="RY" OR WE$="Y" OR WE$="G" THEN 920
 910PRINT "YOU HAVE MADE A MISTAKE":GOSUB 1580:CLS:GOTO 890
 920INPUT "INPUT TIME TO HOLD PATTERN" T:CLS
 930IF T>=0 THEN 950
 940PRINT "NEGATIVE NUMBERS NOT ALLOWED":GOSUB 1580:CLS:GOTO 920
 950K=K+1:NSD$(K)=NS$:WED$(K)=WE$:TD(K)=T
 960INPUT "WANT ANY MORE PATTERNS (Y/N)" TEST$:CLS
 970 IF LEFT$(TEST$,1)="N" OR LEFT$(TEST$,1)="Y" THEN 990
 980 PRINT "YOU HAVE MADE A MISTAKE":GOSUB 1580:CLS:GOTO 960
 990IF LEFT$(TEST$,1)="Y" THEN 860
1000FOR P=1 TO K:OUT=&00
1010POS1=1:POS2=3
1020 IF NSD$(P)="R" THEN GOSUB 1400
1030 IF NSD$(P)="RY" THEN GOSUB 1440
1040 IF NSD$(P)="Y" THEN GOSUB 1500
1050 IF NSD$(P)="G" THEN GOSUB 1540
1060POS1=2:POS2=4
1070 IF WED$(P)="R" THEN GOSUB 1400

1080 IF WED$(P)="RY" THEN GOSUB 1440
1090 IF WED$(P)="Y" THEN GOSUB 1500
1100 IF WED$(P)="G" THEN GOSUB 1540
1110?&FE60=OUT:TIME=0
1120IF TIME/100 < TD(P) THEN 1120
```

493

```
1130 GOSUB 1290
1140 NEXT P
1150 INPUT "NEW SET OF PATTERNS (Y/N)" TEST$:CLS
1160 IF LEFT$(TEST$,1)="N" OR LEFT$(TEST$,1)="Y" THEN 1180
1170 PRINT "YOU HAVE MADE A MISTAKE":GOSUB 1580
1180 IF LEFT$(TEST$,1)="Y" THEN 850 ELSE ?&FE60=&00
1190 MODE 7
1200 END
1210 DEF PROCPLOT(X,Y,C)
1220 VDU 5
1230 MOVE X,Y
1240 GCOL 0,C
1250 VDU 240
1260 VDU 30
1270 VDU 4
1280 ENDPROC
1290 GCOL 0,0
1300 ?&FE60=&00
1310 MOVE 280,320:MOVE 315,320
1320 PLOT 85,280,254:PLOT 85,315,254
1330 MOVE 705,294:MOVE 705,320
1340 PLOT 85,800,294:PLOT 85,800,320
1350 MOVE 705,768:MOVE 740,768
1360 PLOT 85,705,700:PLOT 85,740,700
1370 MOVE 220,700:MOVE 220,726
1380 PLOT 85,315,700:PLOT 85,315,726
1390 RETURN
1400 IF POS1=1 THEN OUT=&01 ELSE OUT=OUT+&08
1410 PROCPLOT (REDLOCX(POS1),REDLOCY(POS1),1)
1420 PROCPLOT (REDLOCX(POS2),REDLOCY(POS2),1)
1430 RETURN
1440 IF POS1=1 THEN OUT=&03 ELSE OUT=OUT+&18
1450 PROCPLOT (REDLOCX(POS1),REDLOCY(POS1),1)
1460 PROCPLOT (REDLOCX(POS2),REDLOCY(POS2),1)
1470 PROCPLOT (YELLOCX(POS1),YELLOCY(POS1),3)
1480 PROCPLOT (YELLOCX(POS2),YELLOCY(POS2),3)
1490 RETURN
1500 IF POS1=1 THEN OUT=&02 ELSE OUT=OUT+&10
1510 PROCPLOT (YELLOCX(POS1),YELLOCY(POS1),3)
1520 PROCPLOT (YELLOCX(POS2),YELLOCY(POS2),3)
1530 RETURN
1540 IF POS1=1 THEN OUT=&04 ELSE OUT=OUT+&20
1550 PROCPLOT (GRELOCX(POS1),GRELOCY(POS1),2)
1560 PROCPLOT (GRELOCX(POS2),GRELOCY(POS2),2)
1570 RETURN
1580 FOR D=1 TO 1000
1590 NEXT D
1600 RETURN
>
>
>
>
>
```

PROGRAM MEET

```
 10 REM-***MEET***
 20 REM
 30 REM-***Set mode and background colour****
 40 MODE 6
 50 G=4
 60 VDU 19,0,G,0,0,0
 70 REM-***Page 1***
 80 REM-***Print title****
 90 GOSUB 1180
100 PRINT TAB(5);"Hi!":PRINT
110 PRINT TAB(5);"Welcome to computing. I am a very"
120 PRINT "small kind of computer known as a "
130 PRINT "MICROCOMPUTER. I am a BBC micro."
140 PRINT:PRINT "What's your name?"
150 PRINT
160 PRINT TAB(5);"Type it in, and then press the"
170 PRINT "RETURN key (you'll find it on the right"
180 PRINT "of the keyboard)."
190 REM-***Accept name****
200 PRINT:INPUT "Your name is...",A$
210 R=LEN(A$)
220 IF R<1 THEN GOTO 200
230 REM-***Take first name***
240 X=INSTR(A$," ")
250 IF X<>0 THEN A$=LEFT$(A$,X-1)
260 REM-***Page 2***
270 REM-***Clear screen and print title***
280 GOSUB 1180
290 PRINT TAB(5);"Hello ";A$;" - pleased to meet"
300 PRINT "you.I only understand capitals,so "
310 PRINT "check the CAPS LOCK light (on the "
320 PRINT "left of the keyboard ) is on ."
330 PRINT:PRINT "Have you done that ?";
340 INPUT " "B$
350 IF B$<>"YES" AND B$<>"Y" THEN PRINT TAB(5);"Type YES when you're ready:
";:GOTO 340
360 REM-***Page 3***
370 REM-***Clear screen and print title***
380 GOSUB 1180
390 PRINT TAB(5);"Have you ever worked with"
400 PRINT "computers before, ";A$;"?";
410 INPUT " "B$
420 IF B$="YES" OR B$="NO" OR B$="Y" OR B$="N" THEN GOTO 450
430 PRINT:PRINT TAB(5);"Sorry, I don't understand you;"
440 PRINT "please type in YES or NO:";:GOTO 410
450 PRINT : PRINT TAB(5);"Easy, isn't it ? People think"
460 PRINT "we're smart, but we're not really."
470 PRINT"I'm fast at doing sums,and I've got"
480 PRINT "a good MEMORY, but really I'm"
490 PRINT "pretty dumb."
500 PRINT:PRINT TAB(5);"If you look, there's a TAPE"
510 PRINT"RECORDER next to me. See it?";
520 INPUT " "B$
530 IF B$="NO" OR B$="N" THEN PRINT TAB(5);"Keep looking. Found it?";:GOTO
520
540 IF B$<>"YES" AND B$<>"Y" THEN PRINT TAB(5);"Answer YES or NO, please: "
;:GOTO 520
550 REM-***Page 4***
560 REM-***Clear screen and print title***
570 GOSUB 1180
```

```
 580 PRINT:PRINT TAB(5);"Inside, there's a CASSETTE."
 590 PRINT "This cassette is just like one that "
 600 PRINT"plays music, but I keep information "
 610 PRINT"on it instead."
 620 PRINT:PRINT"When you're ready,press RETURN: ";:INPUT " "B$
 630 REM-***Page 5****
 640 REM-***Clear screen and print title***
 650 GOSUB 1180
 660 PRINT TAB(5);"This screen is my way of talking"
 670 PRINT"to you. It's called a VDU. That's "
 680 PRINT"short for a Visual Display Unit."
 690 PRINT:PRINT TAB(5);"You can tell where you are on"
 700 PRINT"it by looking for the CURSOR - that's"
 710 PRINT"the name for the small flashing bar."
 720 PRINT"See it on the next line down?"
 730 INPUT " "B$
 740 IF B$="NO" OR B$="N" THEN PRINT TAB(5);"Keep looking.":GOTO 720
 750 IF B$<>"YES" AND B$<>"Y" THEN PRINT TAB(5);"Answer YES or NO : ";:GOTO
730
 760 REM-***Page 6***
 770 REM-***Clear screen and print title***
 780 GOSUB 1180
 790 PRINT TAB(5);"You use the KEYBOARD to talk "
 800 PRINT"to me. It's like a typewriter "
 810 PRINT"keyboard,but you can do other"
 820 PRINT"things with it that you'll learn"
 830 PRINT"about later."
 840 PRINT:PRINT TAB(5);"I'm good at doing sums."
 850 PRINT"Give me three numbers, and I can"
 860 PRINT"add them up, multiply them, and work"
 870 PRINT"out the average for you."
 880 PRINT
 890 PRINT"Do you want me to do that?";
 900 INPUT " "B$
 910 IF B$<>"YES" AND B$<>"Y" THEN GOTO 1100
 920 REM-***Page 7***
 930 REM-***Clear screen and print title***
 940 GOSUB 1180
 950 PRINT
 960 INPUT"  First number....",A
 970 IF A<=0 THEN PRINT"Must have a number:-":GOTO 960
 980INPUT"  Second number...",B
 990 IF B<=0 THEN PRINT"Must have a number:-":GOTO 980
1000 INPUT"  Third number....",C
1010 IF C<=0 THEN PRINT"Must have a number:-":GOTO 1000
1020 D=A+B+C
1030 PRINT:PRINT TAB(5);"The numbers add up to ";D
1040 PRINT TAB(5);"They multiply to give ";A*B*C
1050 PRINT TAB(5);"The average is ";D/3
1060 PRINT:PRINT"Now,press RETURN:";
1070 INPUT " "B$
1080 REM-***Page 8***
1090 REM-***Clear screen and print title***
1100 GOSUB 1180
```

```
1110 PRINT TAB(5);"Well ";A$;", it's been nice "
1120 PRINT"meeting you. I hope you'll be"
1130 PRINT"using me again."
1140 PRINT :PRINT"Bye for now."
1150 PRINT
1160 END
1170 REM-***Subroutine to clear screen and print title****
1180 CLS
1190 PRINT TAB(10,2);"COMPUTER LITERACY"
1200 PRINT TAB(10,3);"-----------------"
1210 PRINT
1220 RETURN
```

PROGRAM MINILOGO

```
   10 REM *** MINI LOGO ***
   20 REM
   30MODE7
   40ADR%=0:ENO%=0:CIN$=" "
   50CLS
   60PROCSCREEN("< < < Mini-logo > > >")
   70DIMSN$(120),CM$(120),PM%(120),PR%(20),E$(6),C$(6),CP%(2),P$(2),AC$(6),FC
$(6),ST%(1,10),REND%(4),RSTART%(4),RNO%(4)
   80N1%=10:REM ** STACK UPPER BOUND **
   90E$(0)="YOU HAVE NO COMMANDS"
  100E$(1)="UNKNOWN COMMAND"
  110E$(2)="COMMAND NAME MISSING"
  120E$(3)="COMMAND NAME ALREADY EXISTS"
  130E$(4)="INVALID PARAMETER"
  140E$(5)="I DO NOT KNOW THIS COMMAND"
  150E$(6)="A NUMBER WAS EXPECTED"
  160 P$(0)="RAND":P$(1)="SIZE":P$(2)=" "
  170 C$(1)="DO":C$(2)="TO":C$(3)="NEW"
  180C$(4)="LIST":C$(5)="REMOVE":C$(6)="BYE"
  190AC$(0)="FD":AC$(1)="BD":AC$(2)="RT"
  200 AC$(3)="LT":AC$(4)="RP":AC$(5)="PU":AC$(6)="PD"
  210FC$(0)="FORWARD":FC$(1)="BACKWARD"
  220FC$(2)="RIGHT":FC$(3)="LEFT"
  230FC$(4)="REPEAT":FC$(5)="PENUP"
  240FC$(6)="PENDOWN"
  250FORI%=0TO120:SN$(I%)=" ":CM$(I%)=" ":PM%(I%)=0:NEXT
  260CT%=0:TP%=0
  270PRINT'CHR$&86;"HAVE YOU A FILE TO INPUT";
  280INPUT,CIN$
  290IFCIN$<>"Y"THEN440
  300PRINT
  310CL%=OPENUP"COMF"
  320IFEOF£CL% THEN420
  330REPEAT
  340INPUT£CL%,SN$(TP%),CM$(TP%),PM%(TP%)
  350IFSN$(TP%)<>"£"THEN390
  360PR%(CT%)=TP%
  370CT%=CT%+1
  380PRINTSPC(10);CHR$&86;CM$(TP%);" LOADED"
  390TP%=TP%+1
  400UNTILEOF£CL%
  410PR%(CT%)=TP%
  420PRINT'',SPC(10);CHR$&86;CT%;" COMMANDS LOADED"'
  430CLOSE£CL%:VDU7
  440REM
  450PRINT'CHR$&83"COMMAND";:INPUTINP$
  460PRINT
  470IFINP$=C$(6)THENPROCCWRITE:END
  480I%=INSTR(INP$," ")
  490IFI%<>0THEN520
  500IF INP$=C$(4)THENPROCALIST:GOTO440
  510PROCER(1):GOTO440
  520CIN$=LEFT$(INP$,I%-1)
  530B%=INSTR(INP$," ",I%+1)
  540 IFB%=0THEN570
  550 CN$=MID$(INP$,I%+1,B%-I%-1)
  560CP$=RIGHT$(INP$,LENINP$-B%):GOTO580
  570CN$=RIGHT$(INP$,LENINP$-I%):CP$=" "
  580PROCNUM:IFN%=0THEN600
  590PROCTPARAM:IFT%=0THENPROCER(4):GOTO440
  600PROCEXIST:IFNM%=0THEN720
```

```
 610IFN%=0 THEN PROCPM1 ELSEGOTO630
 620IFOK1%=1THEN630ELSEPROCER(4):GOTO440
 630IFCIN$=C$(1)THENMODE4:PROCDO:MODE7:GOTO440
 640IFCIN$=C$(3)THEN690
 650IFCIN$=C$(4)THENPROCBLIST:GOTO440
 660IFCIN$=C$(5)THENPROCGO:GOTO440
 670IFNM%=1THENPROCER(3)ELSEPROCER(1)
 680GOTO440
 690PROCGO
 700IFNM%=0THEN670ELSEPROCNCOMM:GOTO440
 710GOTO440
 720IFCIN$=C$(2)THENPROCNCOMM:GOTO440
 730PROCER(5):GOTO440
 740DEF PROCALIST
 750IFCT%=0THENPROCER(0):GOTO810
 760FORI%=0TOCT%-1
 770T%=PR%(I%)
 780IFPM%(T%)>0THENL$=STR$(PM%(T%)):GOTO800
 790L$=P$(PM%(T%)+2)
 800PRINTSPC(4);CHR$&86;CM$(T%);"  ";L$:NEXT
 810ENDPROC
 820DEF PROCBLIST
 830FORT%=PR%(I%)TOPR%(I%+1)-1
 840IFPM%(T%)>0THENL$=STR$(PM%(T%)):GOTO860
 850L$=P$(PM%(T%)+2)
 860PRINTSPC(4);CHR$&86;CM$(T%);"  ";L$:NEXT
 870ENDPROC
 880DEF PROCGO
 890B%=PR%(I%)
 900FORT%=PR%(I%+1)TOTP%-1
 910SN$(B%)=SN$(T%):CM$(B%)=CM$(T%)
 920PM%(B%)=PM%(T%):B%=B%+1:NEXT
 930PRINTCHR$(&86)"COMMAND ";CN$;" REMOVED"
 940T%=I%-B%
 950FORI%=I%+1TOCT%
 960PR%(I%)=PR%(I%+1)-T%:NEXT
 970CT%=CT%-1:TP%=TP%-T%
 980ENDPROC
 990DEF PROCCWRITE
1000PRINTCHR$%86;"DO YOU WANT TO SAVE YOUR COMMANDS";
1010INPUTCIN$
1020IF LEFT$(CIN$,1)<>"Y" GOTO1080
1030CL%=OPENOUT"COMF"
1040FORI%=0TOTP%-1
1050PRINT£CL%,SN$(I%),CM$(I%),PM%(I%):NEXT
1060CLOSE£CL%
1070PRINT',CHR$&86;"YOU HAVE ";CT%;" COMMANDS STORED":VDU7
1080CLS:PROCSCREEN("   **** The End ****")
1090ENDPROC
1100DEF PROCTPARAM
1110CP%(0)=0:CP%(1)=0:CP%(2)=0:Z%=0:T%=0
1120REPEAT
1130IFCP$=P$(Z%)THENCP%(Z%)=1:T%=1:CP%=Z%-2
1140Z%=Z%+1
1150UNTILT%=1ORZ%=3
1160ENDPROC
1170DEF PROCNUM:LOCALL%
1180I%=0:N%=0:L%=LENCP$
1190REPEAT
1200I%=I%+1
1210A%=ASC(MID$(CP$,I%,1))
1220IFA%<48ORA%>57THENN%=1
```

```
1230UNTILN%=1ORI%=L%
1240ENDPROC
1250DEF PROCNCOMM:LOCAL LTP%
1260LTP%=TP%:LPM%=0
1270PROCTPARAM
1280IFT%=0THENPROCER(4):GOTO1490
1290SN$(TP%)="£"
1300CM$(TP%)=CN$:PM%(TP%)=CP%
1310TP%=TP%+1
1320PRINTTAB(4);CHR$&82;:INPUT,INP$
1330IFINP$="END"THEN1470
1340I%=INSTR(INP$," ")
1350IFI%=0THENCN$=INP$:CP$=" ":GOTO1380
1360CN$=LEFT$(INP$,I%-1)
1370CP$=RIGHT$(INP$,LENINP$-I%)
1380PROCNUM
1390PROCUSER
1400IFREP%=0THENPROCEXIST:GOTO1420
1410IFOK%=0THENPROCER(4):GOTO1320ELSEGOTO1460
1420IFNM%=0THENPROCER(1):GOTO1320
1430PROCPM1
1440IFOK1%=0THENPROCER(4):GOTO1320
1450SN$(TP%)="/":GOTO1300
1460SN$(TP%)=STR$(I%+1):GOTO1300
1470PR%(CT%)=LTP%:CT%=CT%+1:PR%(CT%)=TP%:GOTO1490
1480TP%=LTP%
1490ENDPROC
1500DEF PROCUSER
1510I%=-1:REP%=0:OK%=0
1520REPEAT
1530I%=I%+1
1540IFCN$=AC$(I%)ORCN$=FC$(I%)THENREP%=1
1550UNTILI%=6ORREP%=1
1560IFREP%=0THEN1620
1570IFI%<5GOTO1600
1580IFCP$=" "THENOK%=1:CP%=0
1590GOTO1620
1600IFN%=0THENCP%=VAL(CP$):OK%=1:GOTO1620
1610IFCP$=P$(1)THENIFCP%(1)=1THENOK%=1:CP%=-1
1620ENDPROC
1630DEF PROCPM1
1640OK1%=0:B%=PM%(PR%(I%))
1650IFN%=0THENIFB%=-1THENOK1%=1:CP%=VAL(CP$):GOTO1690
1660IFCP$=" "ANDB%=0THENOK1%=1:CP%=0:GOTO1690
1670IFCP$="SIZE"THENIFB%=-1THENOK1%=1:CP%=-1:GOTO1690
1680IFB%=-1THENIFCP%>0THEN OK1%=1
1690 ENDPROC
1700DEF PROCINIT(R%)
1710FORB%=0TON1%:ST%(R%,B%)=0:NEXT
1720ST%(R%,N1%)=-1
1730ENDPROC
1740DEF PROCPUSH(R%,IND%)
1750IFST%(R%,N1%)=N1%-1THENGOTO1700
1760ST%(R%,N1%)=ST%(R%,N1%)+1:ST%(R%,ST%(R%,N1%))=IND%
1770ENDPROC
1780DEF FNPOP(R%)
1790ADR%=ST%(R%,ST%(R%,N1%))

1800ST%(R%,N1%)=ST%(R%,N1%)-1
1810=ADR%
1820DEF PROCGRAF
1830ONVAL(SN$(IND%))GOTO1850,1840,1900,1910,1950,1930,1940
```

```
1840GP%=-GP%
1850A=RAD(BR%)
1860X%=X%+INT(SIN(A)*GP%+0.5)
1870Y%=Y%+INT(COS(A)*GP%+0.5)
1880IFPN$="U"THENMOVEX%,Y%ELSEDRAWX%,Y%
1890GOTO1950
1900BR%=BR%+GP%:GOTO1920
1910BR%=BR%-GP%
1920BR%=BR%MOD360:GOTO1950
1930PN$="U":GOTO1950
1940PN$="D"
1950ENDPROC
1960DEF PROCDO:LOCALR%,SIZE%,N%
1970VDU19,3,4,0,0,0,19,0,6;0;
1980R%=-1:SIZE%=0:LPM%=0
1990IF PM%(PR%(I%))=-1 AND (CP$="SIZE" ORCP$=" ")THEN PROCER(6):GOTO2190
2000IF PM%(PR%(I%))=-1 THEN SIZE%=CP%
2010PROCGRAFSET
2020PROCINIT(0):PROCINIT(1):GOTO2050
2030PROCEXIST:IFNM%=0THENPROCER(1):GOTO2190
2040IFPM%(PR%(I%))=-1 AND PM%(LPM%)>0 THEN SIZE%=PM%(LPM%)
2050PEND%=PR%(I%+1)
2060IND%=PR%(I%)
2070IND%=IND%+1
2080IFIND%=PEND%THENPROCTEST ELSEGOTO2100
2090ONA%GOTO2190,2070
2100IF SN$(IND%)="/" THEN LPM%=IND%: PROCPUSH(0,PEND%):PROCPUSH(1,IND%):CN$=
CM$(IND%):GOTO2030
2110IFPM%(IND%)>0THENGP%=PM%(IND%) ELSE GP%=SIZE%
2120IFSN$(IND%)="5" GOTO2140
2130PROCGRAF:GOTO2070
2140R%=R%+1
2150REND%(R%)=PEND%
2160RSTART%(R%)=IND%
2170RNO%(R%)=GP%
2180GOTO2070
2190PRINT"PRESS THE SPACE BAR TO CONTINUE":CIN$=GET$
2200ENDPROC
2210DEF PROCGRAFSET
2220VDU28,0,31,39,30,24,0,0,70,0,255,4,255,3:BR%=0
2230COLOUR131:COLOUR0:CLS
2240X%=640:Y%=250:MOVEX%,Y%
2250PN$="D"
2260ENDPROC
2270DEF PROCTEST
2280A%=1
2290IFR%=-1THEN2330
2300RNO%(R%)=RNO%(R%)-1
2310IFRNO%(R%)=0THENR%=R%-1:GOTO2330
2320 IND%=RSTART%(R%):A%=2:GOTO2360
2330IFST%(0,N1%)=-1ANDST%(1,N1%)=-1THEN2360
2340PEND%=FNPOP(0):A%=2
2350IND%=FNPOP(1):A%=2
2360ENDPROC
2370DEFPROCEXIST
2380I%=-1:NM%=0
2390REPEAT
2400I%=I%+1
2410IFCN$=CM$(PR%(I%))THENNM%=1
```

```
2420UNTILI%>=CT%-1ORNM%=1
2430ENDPROC
2440DEFPROCSCREEN(CIN$)
2450LOCAL T,L,A$
2460 PRINT'':T=16:L=1:A$=CHR$&FF
2470FORI=&91TO&97
2480PRINTTAB(T);CHR$(I);STRING$(L,A$)
2490T=T-2:L=L+4
2500NEXTI:PRINT
2510FORI=1TO2
2520PRINTTAB(5);CHR$&8D;CHR$&82;CIN$
2530NEXTI:PRINT
2540T=4:L=25
2550FORI=&97TO&91STEP-1
2560PRINT TAB(T);CHR$(I);STRING$(L,A$)
2570T=T+2:L=L-4
2580NEXTI
2590PRINT''
2600ENDPROC
2610DEFPROCER(ENO%):PRINTCHR$&86;E$(ENO%);CHR$(7):ENDPROC
```

PROGRAM PAYROLL

6

```
 10 REM "TAX CALCULATOR"
 20 CLS
 30 PRINT:PRINT:PRINT:PRINT "MODULE C"
 40PRINT:PRINT: PRINT"WAGES AND SALARIES"
 50 FOR I=1TO2000:NEXTI
 60CLS
 70 PRINT
 80 PRINT "ENTER NAME OF EMPLOYEE"
 90 PRINT
100 INPUT N$
110 PRINT
120 PRINT "ENTER CLOCK NUMBER"
130 PRINT
140 INPUT CN
150 PRINT
160 PRINT "WEEKLY OR MONTHLY PAID?"
170 PRINT
180 PRINT "ENTER", """M"" FOR MONTHLY"
190 PRINT" ", """W"" FOR WEEKLY"
200 PRINT
210 INPUT M$
220 IF M$="M" THEN LET Z=9
230 IF M$= "M" THEN LET W=12
240 IF M$= "W" THEN LET Z=11.4
250 IF M$="W" THEN LET W=52
260 CLS
270 PRINT
280PRINT"THIS WEEKS/MONTHS BASIC PAY?"
290 PRINT
300 INPUT B
310 PRINT
320 PRINT "TAX CODE? (FIGURES ONLY)"
330 PRINT
340 INPUT TC
350 PRINT
360 PRINT "TAX MONTH/WEEK NUMBER?"
370 PRINT
380 INPUT M
390 PRINT
400 PRINT"ENTER GROSS PAY UP TO THIS DATE"
410 PRINT
420 INPUT TG
430 PRINT
440 PRINT"ADDITIONAL PAY,HOL.PAY ETC.?"
450 PRINT
460 INPUT AP
470 PRINT
480 PRINT"ENTER TAX PAID UP TO THIS DATE"
490 PRINT
500 INPUT TT
```

```
 510 CLS
 520 IF M$="W" THEN GOSUB 1210
 530 PRINT
 540 PRINT "ENTER ANY DEDUCTIONS"
 550 PRINT
 560 INPUT OD
 570 CLS
 580 REM * FREE PAY CALC.*
 590 LET P=INT((TC*10+Z)/W*100)/10
 600 IF M$="W" THEN GOTO 640
 610 LET FP=(INTP/10+.05)*M
 620 IF INT((P-INTP)*100)> 50 THEN LETFP=(INTP/10+.10)*M
 630 GOTO 660
 640 LET FP=INTP/10*M
 650 IF INT((P-INTP)*100)  >=50THEN LETFP=(INTP/10+.05)*M
 660 REM * TAXABLE *
 670 LET TG=INT((TG+B+AP)*100 +.5)/100
 680 LET T=INT(TG-FP)
 690 IF FP>TG THEN GOTO 1150
 700 REM *TAX DUE *
 710 LET TD=T*.30
 720 REM * TAX THIS WEEK *
 730 LET X=INT((TD-TT)*100+.5)/100
 740 LET G=INT((B+AP)*100+.5)/100
 750 IF X>G THEN GOTO 1190
 760 IF M$="W" THEN GOTO 860
 770 REM * MONTHLY N/I *
 780 LET C=INT(G)
 790 IF INT(INTG/2)*2<>INTG THEN   LET C= INTG+1
 800 LET D=C*.0775
 810 LET E=INT(D*100+.49)/100
 820 IF G<117 THEN LET E=0
 830 IF G=117 THEN LET E=9.07
 840 IF G>=866.67 THEN LET E=67.17
 850 GOTO 940
 860 REM * WEEKLY N/I  *
 870 LET C=INTG+.25
 880IF INT((G-INTG)*100)>=50 THEN LET C=INTG+.75
 890 LET D=C*.0775
 900 LET E=INT(D*100+.49)/100
 910 IF G<27 THEN LET E=0
 920 IF G=27 THEN LET E=2.09
 930 IF G>=200 THEN LET E=15.5
 940 VDU2
 950 PRINT "______________________________________"
 960 PRINT N$,"CLOCK NUMBER ";CN
 970 PRINT"______________________________________"
 980 PRINT "PAYE AND N/I","PERIOD ";M
 990 PRINT "______________________________________"
1000 PRINT "CODE ";TC
```

```
1010 PRINT "BASIC PAY",B
1020 PRINT "ADDITIONAL PAY",AP
1030 PRINT "GROSS PAY".G
1040 PRINT
1050 PRINT"TAX",X
1060 PRINT "N/I",E
1070 PRINT
1080 PRINT "OTHER DEDUCTIONS",OD
1090 PRINT
1100 PRINT "NET PAY",INT((G-X-E-OD)  *100+.5)/100
1110 PRINT
1120 PRINT "TOTAL GROSS TO DATE",TG
1130 PRINT "TOTAL TAX TO DATE",INT((TT+X)*  100+.5)/100
1140 GOTO 1270
1150 REM * TAX REFUND *
1160 LET X=0
1170 IF TT>0 THEN LET X=-TT
1180 GOTO 740
1190 PRINT "TAX IS GREATER THAN PAY"
1200 GOTO 1270
1210 PRINT:PRINT "NUMBER OF WEEKS HOLIDAY PAY"
1220 PRINT"PAID THIS WEEK?"
1230 PRINT
1240 INPUT H
1250 LET M=M+H
1260 RETURN
1270 PRINT"----------------------------------------"
1280 VDU3
1290 PRINT"ANOTHER RUN ?"
1300 PRINT"ENTER","""Y"" FOR YES"
1310 PRINT" ","""N"" FOR NO"
1320 INPUT A$
1330 CLS
1340 IF A$="Y" THEN GOTO 60
1350 STOP
```

PROGRAM POP

```
 10DIM M(5,1),F(5,1),P(5,5),Q(5,5)
 20DIM S(5,1),T(5,1)
 30MODE3
 40PRINT"POPULATION FORECASTING MODEL"'
 50PRINT" YOU ARE INVITED TO EXPERIMENT WITH FORECASTING THE"
 60PRINT"POPULATION OF RURITANIA, A CLOSED COMMUNITY WITH NO"
 70PRINT"MIGRATION"
 80PRINT" THE PRESENT POPULATION IS AS FOLLOWS  :-  "'
 90PRINT"  AGE               MALES          FEMALES"'
100PRINT" 0-14                600            650"
110PRINT"15-29                800            900"
120PRINT"30-44                700            750"
130PRINT"45-59                500            550"
140PRINT"60-74                300            330"
150M(1,1)=600 :M(2,1)=800 :M(3,1)=700 :M(4,1)=500 :M(5,1)=300
160F(1,1)=650 :F(2,1)=900 :F(3,1)=750 :F(4,1)=550 :F(5,1)=330
170FORI=1 TO 5:FOR J=1 TO 5
180P(I,J)=0 :Q(I,J)=0
190NEXT,
200INPUT''"  TYPE IN THE BIRTH RATE FOR FEMALES AGED 15-29 ",P(1,2)
210P(1,2)=P(1,2)/2: Q(1,2)=P(1,2)
220INPUT"  TYPE IN THE BIRTH RATES FOR FEMALES AGED 30-44 ",P(1,3)
230P(1,3)=P(1,3)/2: Q(1,3)=P(1,3)
240CLS:PRINT"  TYPE IN THE SURVIVORSHIP RATES FOR THE FOLLOWING AGE GROUPS"
250PRINT"  MALE"
260INPUT" 0-14 ",P(2,1)
270INPUT"15-29 ",P(3,2)
280INPUT"30-44 ",P(4,3)
290INPUT"45-59 ",P(5,4)
300PRINT"WE ASSUME, SADLY, THAT ALL AGED 60 -74 WILL"
310PRINT"DIE BEFORE THE END OF THE 15 YEAR FORECASTING PERIOD"
320PRINT '"FEMALE"
330INPUT" 0-14 ",Q(2,1)
340INPUT"15-29 ",Q(3,2)
350INPUT"30-44 ",Q(4,3)
360INPUT"45-59 ",Q(5,4)
370FOR I=1 TO 5:FOR K=1 TO 5:FOR J=1 TO 5
380S(I,1)=S(I,1)+P(I,J)*M(J,1): T(I,1)=T(I,1)+Q(I,J)*F(J,1)
390NEXT J,K,I
400CLS:PRINT" FORECASTED POPULATION OF RURITANIA AFTER 15 YEARS "'
410FOR I=1 TO 5:M(I,1)=S(I,1): F(I,1)=T(I,1): NEXT
420PRINT"   AGE   ","   MALES   ","   FEMALES"'
430PRINT"   0-14  ",M(1,1),SPC10,F(1,1)
440PRINT"  15-29  ",M(2,1),SPC10,F(2,1)
450PRINT"  30-44  ",M(3,1),SPC10,F(3,1)
460PRINT"  45-59  ",M(4,1),SPC10,F(4,1)
470PRINT"  60-74  ",M(5,1),SPC10,F(5,1)
480INPUT''"DO YOU WANT A FORECAST FOR THE NEXT 15 YEARS",A$
490IF A$="NO" OR A$="N" THEN 520
500INPUT ''"WITH THE SAME BIRTH AND SURVIVORSHIP RATES ",B$
510IF B$="YES" OR B$="Y" THEN 370 ELSE 170
520END
```

PROGRAM STOCK

```
 10REM *** STOCK CONTROL PROGRAM ***
 20REM *** BY STEPHEN LEWIS      ***
 30REM *** GLOS.C.A.T.           ***
 40
 50MODE7
 60REM ** If error end program **
 70ON ERROR GOTO 280
 80REM ** Initialisation procedure **
 90PROCinit
100REM ** Display options available to the user **
110PROCmenu
120REM ** Go to correct procedure depending on option **
130REM ** chosen and then return to main menu         **
140ON D GOTO 160,180,200,220,240,260,280
150REM ** Procedure to display all items in stock     **
160PROCprint:GOTO 110
170REM ** Procedure to display a single item of stock **
180PROCenquiry:GOTO 110
190REM ** Procedure to add an item of stock    **
200PROCadd:GOTO 110
210REM ** Procedure to change any item details **
220PROCamend:GOTO 110
230REM ** Procedure to update stock levels     **
240PROCupdate:GOTO 110
250REM ** Procedure to delete an item of stock **
260PROCdelete:GOTO 110
270REM ** Enable cursor control keys and clear screen and end program run **
280*FX4,0
290CLS:END
300
310
320DEF PROCinit
330REM ** Dimension array to hold details of items in stock **
340REM ** Maximum number held=25 **
350DIM STOCK$(25,9)
360REM ** Read example data into array **
370FOR J%=1TO4:FOR K%=1TO9:READ STOCK$(J%,K%):NEXT:NEXT
380
390REM ** Example data to be used **
400DATA 123,BIRO,0.09,642,500,OFFICE SUPPLIES ,1 THE ROAD,CHELTENHAM,21343
410DATA 130,PRINTERS,100.00,9,4,GLOS.C.A.T.,THE PARK,CHELTENHAM,28021
420DATA 135,CONCRETE MIX,111.23,50,25,S.KLUTTIG,15 BATH ST,CHELTENHAM,25728
430DATA 789,FAIRY LIQUID,0.67,7,2,SAINSBURYS,HIGH ST,CHELTENHAM,89078
440
450REM ** MODE 7 control code abbreviations **
460R$=CHR$129:G$=CHR$130:Y$=CHR$131:B$=CHR$132
470M$=CHR$133:C$=CHR$134:W$=CHR$135:F$=CHR$136
480D$=CHR$141:O$=CHR$156:Z$=CHR$157
490REM ** Set number of items in stock to 4(example data),and error flag **
500X%=4:F=0
510REM ** Disable cursor control keys **
520*FX4,1
530ENDPROC
540
550
560DEF PROCmenu
570REM ** Print heading at top of screen **
580PROCheading
590REM ** Print list of options available **
```

```
600PRINTC$;"Do you want to :"''
610PRINTTAB(5)C$;"1. Display all records"'
620PRINTTAB(5)C$;"2. Make an enquiry"'
630PRINTTAB(5)C$;"3. Add an item of stock"'
640PRINTTAB(5)C$;"4. Amend a record"'
650PRINTTAB(5)C$;"5. Update a record"'
660PRINTTAB(5)C$;"6. Delete an item"'
670PRINTTAB(5)C$;"7. Quit the system"''
680REM ** Accept answer using function FNinput instead of using INPUT **
690PRINTTAB(10,23)C$;"Answer 1-7: ";:N$=FNinput(POS,23,1,1,3):N=VAL(N$)
700REM ** Check for limits on answer **
710IF N<1 OR N>7 THEN PRINTTAB(24,23)"  ":GOTO 690
720D=VAL(N$):ENDPROC
730
740
750DEF PROCprint
760REM ** Check to see if there are any items in stock **
770IF X%<1 THEN PROCerror:ENDPROC
780J%=0:REPEAT:J%=J%+1
790REM ** Procedure to display details of an item of stock **
800PROCdisplay(J%)
810PRINTTAB(5,22)C$;"Press SPACE BAR to continue";:A$=GET$
820REM ** Wait for SPACE BAR to be pressed to continue to next item **
830REM ** or the letter 'F' to be pressed to end the procedure **
840IF A$="F" THEN ENDPROC ELSE IF A$<>" " THEN 810
850REM ** If all items viewed then end procedure **
860UNTIL J%=X%:ENDPROC
870
880
890DEF PROCenquiry
900REM ** Check to see if there are any items in stock **
910IF X%<1 THEN PROCerror:ENDPROC
920REM ** Procedure to choose item required **
930PROCchoose("make an enquiry"):IF F<>0 THEN 970 ELSE PROCdisplay(J%)
940REM ** Wait for SPACE BAR to be pressed **
950PRINTTAB(5,22)C$;"Press SPACE BAR to continue";:REPEAT UNTIL GET$=" "
960REM ** Ask for a repeat of the procedure **
970PROCagain("enquiries to be made")
980IF P$="Y"  THEN 930
990ENDPROC
1000
1010
1020DEF PROCadd
1030REM ** Add one to number of items in stock **
1040X%=X%+1
1050PROCheading
1060REM ** Ask for new item number **
1070PRINTTAB(4,5)C$;"Enter new item number:";:IN$=FNinput(POS,5,3,3,3)
1080REM ** Check to see if number already exists **
1090F=0:PROCcheck(IN$,1,4,7):IF F<>0 THEN 1070 ELSE STOCK$(X%,1)=IN$
1100REM ** Ask for the new items' description **
1110PRINTTAB(4,7)C$;"Enter description:";:STOCK$(X%,2)=FNinput(POS,7,3,16,1)
1120REM ** Ask for item price **
1130PRINTTAB(4,9)C$;"Enter item price:`";:IP$=FNinput(POS,9,1,6,2)
1140F=0:PROCcheck(IP$,2,6,11):IF F<>0 THEN 1130 ELSE STOCK$(X%,3)=IP$
1150REM ** Ask for new stock level **
1160PRINTTAB(4,11)C$;"Enter stock level:";:SL$=FNinput(POS,11,1,3,3)
1170F=0:PROCcheck(SL$,3,7,13):IF F<>0 THEN 1160 ELSE STOCK$(X%,4)=SL$
1180REM ** Ask for re-order level **
1190PRINTTAB(4,13)C$;"Enter re-order level:";:RL$=FNinput(POS,13,1,3,3)
1200IF VAL(RL$)<VAL(STOCK$(X%,4)) THEN STOCK$(X%,5)=RL$:GOTO 1240
1210PRINTTAB(4,15)R$;"Must be less than stock level":PROCwait(2)
```

```
 1220PRINTTAB(4,15)STRING$(30," "):GOTO 1190
 1230REM ** Ask for 3 lines of address **
 1240PRINTTAB(4,15)C$;"Suppliers address";:FOR H%=1 TO 3:PRINTTAB(13,15+H%)C$;"l
ine ";H%;:STOCK$(X%,5+H%)=FNinput(21,15+H%,3,16,1):NEXT
 1250PRINTTAB(4,20)C$;"Suppliers phone number:";:STOCK$(X%,9)=FNinput(POS,20,0,1
0,3):PROCdisplay(X%)
 1260REM ** If details not correct enter them again **
 1270PRINTTAB(5,21)G$;"Are the details correct ? ";
 1280ANS$=FNinput(POS,21,1,3,1):IF LEFT$(ANS$,1)="Y" THEN 1320
 1290REM ** Only accept an 'N' or a 'Y' **
 1300IF LEFT$(ANS$,1)="N" THEN STOCK$(X%,1)="":GOTO 1050 ELSE PRINTTAB(30,21)"
":GOTO 1270
 1310REM ** Ask for a repeat of procedure **
 1320PROCagain("records to add")
 1330IF P$="Y" THEN 1040 ELSE ENDPROC
 1340
 1350
 1360DEF PROCamend
 1370REM ** Check if there are any items in stock **
 1380IF X%(1 THEN PROCerror:ENDPROC
 1390REM ** Select item required **
 1400PROCchoose("amend a record"):IF F()0 THEN 1800
 1410PROCdisplay(J%)
 1420REM ** Check that this is item required **
 1430PRINTTAB(0,21)G$;"Is this the record to be amended?";:V$=FNinput(33,21,1,3,
1)
 1440IF LEFT$(V$,1)()"Y" THEN 1800
 1450PRINTTAB(5,21)STRING$(34," ")
 1460REM ** Select which detail is to be changed **
 1470PRINTTAB(0,21)G$;"Which part do you want to change ?"
 1480PRINTTAB(10,23)G$;"Answer 1-7 :";:ANS$=FNinput(POS,23,1,1,3):ANS=VAL(ANS$)
 1490IF ANS)7 THEN 1480 ELSE IF ANS=4 THEN 1620
 1500F=0:PRINTTAB(0,21)STRING$(39," ")
 1510REM ** Ask for new detail to be typed in **
 1520PRINTTAB(5,21)G$;"Type in your new part ";ANS
 1530PRINTTAB(0,23)STRING$(39," "):PRINTTAB(13,23)G$;")";
 1540REM ** Enter and validate new detail **
 1550ON ANS GOTO 1560,1580,1590,1620,1670,1690,1720
 1560IN$=FNinput(POS,23,3,3,3):PROCcheck(IN$,1,5,21)
 1570IF F()0 THEN 1500 ELSE STOCK$(J%,1)=IN$:GOTO 1740
 1580STOCK$(J%,2)=FNinput(POS,23,3,16,1)::GOTO 1740
 1590PRINTTAB(15,23)"'";:IP$=FNinput(POS,23,3,6,2):PROCcheck(IP$,2,5,21)
 1600IF F()0 THEN 1500 ELSE STOCK$(J%,3)=IP$:GOTO 1740
 1610REM ** Stock level cannot be changed in this section **
 1620PRINTTAB(0,21)R$;"You cannot change this (see Updating)  "
 1630PRINTTAB(3,23)C$;F$;"Press SPACE BAR to continue";
 1640REM ** Wait for SPACE BAR to be pressed **
 1650REPEAT UNTIL GET=32:GOTO 1800
 1660REM ** Accept new re-order level and if above stock level re-order **
 1670STOCK$(J%,5)=FNinput(POS,23,1,3,3):IF VAL(STOCK$(J%,5))(VAL(STOCK$(J%,4)) T
HEN 1740 ELSE PROCdisplay(J%):PROCorder:GOTO 1800
 1680REM ** Set up text window to accept three lines for address in loop **
 1690PRINT:VDU28,4,23,39,23:FOR I%=1 TO 3
 1700PRINTG$;"LINE ";I%;" )";Y$;:STOCK$(J%,5+I%)=FNinput(POS,0,3,20,1)
 1710NEXT:VDU26:GOTO 1740
 1720STOCK$(J%,9)=FNinput(POS,23,0,10,3)
 1730REM ** Show all item details and ask if any more changes **
 1740PROCdisplay(J%)
 1750PRINTTAB(3,23)G$;"Have you finished your changes ?";
 1760AN$=FNinput(36,23,1,3,1)
 1770REM ** If answer is Y then repeat procedure **
 1780IF LEFT$(AN$,1)<>"Y" THEN 1410
 1790REM ** Ask if details of another item are to be changed **
 1800PROCagain("records to be amended")
 1810IF P$="Y" THEN 1400 ELSE ENDPROC
 1820
 1830
 1840DEF PROCupdate
 1850REM ** Check to see if there are any items in stock **
 1860IF X%<1 THEN PROCerror:ENDPROC
 1870REM ** Select item to be updated **
 1880PROCchoose("update a record"):IF F<>0 THEN 2070 ELSE PROCdisplay(J%)
 1890VDU28,0,24,39,19
 1900PRINTTAB(3,3)G$;"Is this the file to be updated?";:AN$=FNinput(POS,3,1,3,1)
 1910IF LEFT$(AN$,1)<>"Y" THEN VDU26:GOTO 1860
 1920CLS:PRINTTAB(4,2)G$;"Have you BOUGHT or SOLD stock ?"
 1930PRINTTAB(9,4)G$;"Answer 'B' or 'S': ";:A$=FNinput(28,4,1,1,1)
 1940IF A$="S" THEN H$="sold" ELSE IF A$="B" THEN H$="bought" ELSE 1920
 1950CLS:PRINTTAB(3,3)G$;"How many have been ";H$;"?";
 1960Nsold$=FNinput(POS,3,1,3,3):Nsold=VAL(Nsold$)
 1970IF A$="B" THEN Nsold=-Nsold
 1980REM ** Check to see if more were sold than were in stock **
 1990IF Nsold<=VAL(STOCK$(J%,4)) THEN 2030
 2000PRINTTAB(1,1)F$;R$;"T H I S   I S   I M P O S S I B L E "
 2010PRINTTAB(4,5)C$;"Press SPACE BAR to continue";
 2020IF GET$<>" " THEN 2010 ELSE GOTO 1950
 2030STOCK$(J%,4)=STR$(VAL(STOCK$(J%,4))-Nsold):VDU26;12:PROCdisplay(J%)
 2040REM ** Re-order item if stock level falls below re-order level **
 2050IF VAL(STOCK$(J%,4))<=VAL(STOCK$(J%,5)) THEN PROCorder ELSE PRINTTAB(5,22)C
$;"Press SPACE BAR to continue";:IF GET$<>" " THEN 2050
 2060REM ** Ask if more items to be updated **
 2070PROCagain("records to update")
 2080IF P$="Y" THEN 1880 ELSE ENDPROC
 2090
 2100
 2110DEF PROCorder
 2120VDU28,0,24,39,19:PRINTTAB(4,2)R$;F$;"This item must be re-ordered"
 2130REM ** Ask if connected to a printer **
 2140PRINTTAB(5,4)C$;"Are you linked to a PRINTER ?";:ANS$=FNinput(POS,4,1,3,1)
 2150IF LEFT$(ANS$,1)="Y" THEN 2210
 2160REM ** If not ask for order to be made out by hand **
 2170CLS:PRINTTAB(0,2)C$;"Please ensure that an order is placed"
 2180PRINTTAB(5,4)C$;"Press SPACE BAR to continue";
 2190IF GET$<>" " THEN 2190 ELSE VDU26:ENDPROC
 2200REM ** If Y ask how many to order **
 2210CLS:PRINTTAB(3,3)C$;"How many do you want to order ";
 2220Num$=FNinput(POS,3,1,3,3):Num=VAL(Num$)
 2230REM ** Make sure enough items are ordered **
 2240IF VAL(STOCK$(J%,4))+Num>=VAL(STOCK$(J%,5)) THEN 2270 ELSE PRINTTAB(2,3)R$;
"You must exceed the re-order level":PRINTTAB(5,5)C$;"Press SPACE BAR to continu
e";
 2250IF GET$<>" " THEN 2240 ELSE 2210
 2260REM ** Text window to stop order-slip being printed on screen **
 2270CLS:PRINTTAB(5,2)C$;"Please wait while the re-order":PRINTTAB(8,4)C$;"slip
is being printed";:VDU28,31,23,31,23;2
 2280REM ** Print out order slip on printer with relevant details **
 2290 PRINTTAB(17)"GLOUCESTERSHIRE COLLEGE OF ARTS AND TECHNOLOGY":PRINTTAB(16)S
TRING$(48,"-"):PRINT" ":PRINT" "
 2300PRINTTAB(2)"To : ";STOCK$(J%,6);TAB(36)"| Deliver to : G.C.A.T.(Christchurc
h Centra)"
 2310PRINTTAB(8)STOCK$(J%,7);TAB(36)"|";TAB(54)"Gloucester Road"
 2320PRINTTAB(9)STOCK$(J%,8);TAB(36)"|";TAB(55)"Cheltenham":PRINTTAB(36)"|"
 2330PRINTTAB(5)"Telephone:";STOCK$(J%,9);TAB(36)"|";TAB(49)"Telephone:513134"
 2340PRINTTAB(36)"|":PRINTSTRING$(36,"_");"|";STRING$(42,"_")
 2350PRINTTAB(9)"|";TAB(36)"|";TAB(47)"|"·TAB(60)"|"
 2360REM ** Print headings and set print format **
 2370PRINT" Item No |     Item Description      | Quantity | Item Price |   Total
 Price "
 2380PRINT"_________|__________________________|__________|____________|________
_______________":@%=&00020206
 2390FOR K=1 TO 2:PRINTTAB(9)"|";TAB(36)"|";TAB(47)"|";TAB(60)"|":NEXT
 2400PRINTTAB(3)STOCK$(J%,1);TAB(9)"| ";TAB(9+((26-LEN(STOCK$(J%,2)))/2))STOCK$(
J%,2);TAB(35)" |";TAB(40)STR$(Num);TAB(47)"|  $";VAL(STOCK$(J%,3));TAB(60)"|
  $";Num*VAL(STOCK$(J%,3)):@%=10
 2410FOR K=1 TO 2:PRINTTAB(9)"|";TAB(36)"|";TAB(47)"|";TAB(60)"|":NEXT
 2420PRINT"_________|__________________________|__________|____________|________
_______________":FORJ=1TO4:PRINT" ":NEXT
 2430PRINTTAB(5)"Date......................";TAB(40)"Signed.....................
.....":FORJ=1TO3:PRINT" ":NEXT:PRINTSTRING$(79,"-"):FORJ=1TO3:PRINT" ":NEXT
 2440REM ** Reset normal text window and wait for SPACE BAR **
 2450VDU28,0,24,39,19;3;12:PRINTTAB(5,3)C$;"Press SPACE BAR to continue";
 2460REPEAT UNTIL GET$=" ":VDU26;12:ENDPROC
 2470
 2480
 2490DEF PROCdelete
 2500REM ** Check to see if any items in stock **
 2510IF X%(1 THEN PROCerror:ENDPROC
 2520REM ** Select item to be deleted **
 2530PROCchoose("delete a record"):IF F()0 THEN 2620 ELSE PROCdisplay(J%)
 2540PRINTTAB(0,22)G$;"Is this the Item to be Deleted ?";:T$=FNinput(POS,22,1,3,
1)
 2550IF LEFT$(T$,1)()"Y" THEN 2620
 2560PROCheading
 2570FORJ=11TO12:PRINTTAB(3,J)M$;D$;"This Item Has Now Been Deleted":NEXT
 2580PRINTTAB(3,23)Y$;F$;"Press SPACE BAR to continue";:REPEAT UNTIL GET$=" "
 2590REM ** Move elements of remaining items up array to erase an item **
 2600FOR K%=J% TO X%:FOR L%=1 TO 9:STOCK$(K%,L%)=STOCK$(K%+1,L%)
 2610NEXT:NEXT:X%=X%-1
 2620PROCagain("record to be deleted")
 2630IF P$="Y" THEN 2510 ELSE ENDPROC
 2640
 2650
 2660DEF PROCchoose(A$)
 2670REM ** Procedure to select an item from array **
 2680PROCheading
 2690REM  ** Ask if item to selected by number or description **
 2700FORJ=1TO2:PRINTTAB(3)C$;D$;"Do you want to ";A$;" by":NEXT:PRINT:PRINT
 2710FORJ=1TO2:PRINTTAB(8)C$;D$;"1. Item Number":NEXT:PRINT
 2720FORJ=1TO2:PRINTTAB(14)C$;D$;"Or":NEXT:PRINT:PRINT
 2730FORJ=1TO2:PRINTTAB(8)C$;D$;"2. Item Description":NEXT:PRINT
 2740PRINTTAB(13)C$;"Answer 1 or 2 :";:S$=FNinput(POS,VPOS,1,1,3):S=VAL(S$)
 2750 IF NOT (S=1 OR S=2) THEN 2680
 2760PROCheading
 2770IF S=1 THEN T$="Item number" ELSE T$="Item description"
 2780REM ** Ask for number or description **
 2790FORJ=8TO9:PRINTTAB(3,J)C$;D$;"Type in the ";T$:NEXT
 2800J%=0:PRINTTAB(13,15)C$;")";:K$=FNinput(POS,15,3,13*S-10,5-2*S)
 2810REM ** Search array for number or description **
 2820REPEAT:J%=J%+1
 2830IF STOCK$(J%,S)=K$ THEN 2870 ELSE UNTIL J%=X%
 2840REM ** If number or description not found display error message **
 2850FORJ=8TO9:PRINTTAB(0,J)R$;D$;F$;"This ";T$;" Does Not Exist":NEXT:F=1
 2860PRINTTAB(3,22)C$;F$;"Press SPACE BAR to continue";:IF GET$()" " THEN 2860
 2870ENDPROC
```

```
2880
2890
2900DEF PROCdisplay(J%)
2910REM ** Procedure to display an items details **
2920PROCheading
2930PRINTTAB(2,4)C$;"1. Item No :";Y$;STOCK$(J%,1)
2940PRINTTAB(2,6)C$;"2. Item Description:";Y$;STOCK$(J%,2)
2950PRINTTAB(2,8)C$;"3. Item Price :";Y$;"'";STOCK$(J%,3)
2960PRINTTAB(2,10)C$;"4. No In Stock:";Y$;STOCK$(J%,4)
2970PRINTTAB(2,12)C$;"5. Re-order Level:";Y$;STOCK$(J%,5)
2980PRINTTAB(2,14)C$;"6. Supplier:";Y$;STOCK$(J%,6)
2990PRINTTAB(16,15)Y$;STOCK$(J%,7)
3000PRINTTAB(17,16)Y$;STOCK$(J%,8)
3010PRINTTAB(2,18)C$;"7. Suppliers Telephone No:";Y$;STOCK$(J%,9)
3020ENDPROC
3030
3040
3050DEF PROCagain(H$)
3060REM ** Procedure to ask for a repeat of a Procedure **
3070F=0:PROCheading
3080FORJ=11TO12:PRINTTAB(3,J)Y$;D$;"Any more ";H$;" ?":NEXT
3090PRINTTAB(10,15)Y$;"Answer Y/N :";:P$=FNinput(POS,15,1,1,1)
3100ENDPROC
3110
3120
3130DEF PROCcheck(X$,Q%,X,Y)
3140REM ** Procedure to validate NEW and AMENDED item details **
3150ON Q% GOTO 3160,3220,3270
3160IF X%=1 THEN ENDPROC
3170REM ** Check for any other item numbers the same **
3180FOR L%=1 TO X%:IF STOCK$(L%,1)()X$ THEN NEXT ELSE F=1:NEXT
3190IF F=0 ENDPROC ELSE PRINTTAB(X,Y)R$;"This number already exists !";
3200PROCwait(2):PRINTTAB(X,Y)STRING$(30," ")
3210REM ** Check if decimal part more than 3 numbers **
3220A=INSTR(X$,"."):IF A=0 THEN ENDPROC
3230X1$=RIGHT$(X$,LEN(X$)-A)
3240IF LEN(X1$)(3 THEN ENDPROC ELSE PRINTTAB(X,Y)R$;"Don't be silly";
3250PROCwait(2):PRINTTAB(X,Y)STRING$(30," "):F=1:ENDPROC
3260REM ** Make sure a zero not entered **
3270IF VAL(X$)(1 THEN PRINTTAB(X,Y)R$;"There must be some":F=1
3280ENDPROC
3290
3300DEF FNinput(Xpos%,Ypos%,MIN%,MAX%,Type%)
3310REM ** Function to replace INPUT statement **
3320REM ** Xpos%,Ypos%:screen co-ordinates. Min%,Max%:min and max length  **
3330REM ** of string returned. Type%:to accept integer,decimal or letters **
3340PRINTTAB(Xpos%,Ypos%)STRING$(MAX%," ");:PRINTTAB(Xpos%,Ypos%);:X$="":D=0
3350Q$=GET$:A=ASC(Q$):IF A=13 THEN 3460
3360 IF A=127 AND POS(=Xpos% THEN 3440 ELSE IF A=127 AND RIGHT$(X$,1)="." D=0
3370 IF A=127 VDU127:X$=LEFT$(X$,LEN(X$)-1):GOTO 3350
3380ON Type% GOTO 3390,3400,3430
3390IF (A)64 AND A(91) OR A=32 THEN 3450
3400IF A=46 THEN D=D+1
3410REM ** Check only one decimal point **
3420IF D(2 AND A=46 THEN 3450 ELSE IF A=46 THEN 3440
3430IF A)47 AND A(58 THEN 3450
3440SOUND 1,-15,215,4:GOTO 3350
3450IF LEN(X$))=MAX% THEN 3440 ELSE X$=X$+Q$:PRINT Q$;:GOTO 3350
3460IF LEN(X$)(MIN% THEN 3350 ELSE PRINT:=X$
3470
3480DEF PROCheading
3490REM ** Clear screen and print heading at top of screen **
3500VDU26;12:FORJ=1TO2:PRINTB$;Z$;Y$;D$;" Glos.C.A.T. Stock Control System"
```

```
3510NEXT:PRINT:PRINT:PRINT
3520ENDPROC
3530
3540
3550DEF PROCerror
3560REM ** If no items in stock print message **
3570PROCheading
3580FORJ=10TO11:PRINTTAB(3,J)R$;D$;F$;"There are no Items of Stock":NEXT
3590PRINTTAB(5,22)Y$;"Press SPACE BAR to continue":IF GET$<>" " THEN 3590
3600ENDPROC
3610:
3620DEF PROCwait(Time%)
3630REM ** Time delay of Time% seconds **
3640Wait=INKEY(Time%*100)
3650ENDPROC
3660
```

PROGRAM STOCKFILE

```
    5 CHOICE=1:PARNO=1
   10 MODE3
   20REM PROGRAM IS DESIGNED TO DEMONSTRATE KEEPING A STOCK RECORD FILE
   30REM IN PARTICULAR IT DEMONSTRATES THE RE-ORDER SYSTEM
   40DIM STOCK(25,4)
   50FOR I = 1 TO 8
   60FOR J = 1 TO 4
   70READ STOCK(I,J)
   80NEXT J
   90NEXT I
  100DATA 1,50,10,15,2,30,5,10,3,225,125,175,4,5,2,4,5,2,1
  110DATA 2,6,23,10,12,7,16,8,10,8,44,20,30
  120GOSUB 140
  130GOTO 270
  140REM DISPLAY STOCK FILE
  150PRINT TAB(4);"PART";TAB(16);"QUANTITY";TAB(32);"MINIMUM";TAB(47);"RE-ORD
ER"
  160PRINT TAB(5);"NO";TAB(16);"IN STOCK";TAB(33);"STOCK";TAB(48);"LEVEL"
  170PRINT:PRINT
  180FOR L = 1 TO 8
  190PRINT TAB(5);STOCK(L,1);TAB(18);STOCK(L,2);TAB(34);STOCK(L,3);TAB(50);ST
OCK(L,4)
  200NEXT L
  210 PRINT
  220IF CHOICE = 3 THEN 520
  230IF STOCK(PARNO,2) <= STOCK(PARNO,4) THEN 240 ELSE RETURN
  240PRINT"********* ITEM NO. ";PARNO;" REQUIRES RE-ORDER ACTION. *********"
  250PRINT:PRINT:PRINT
  260RETURN
  270REM MENU SECTION
  280PRINTTAB(10)"THERE ARE 3 OPTIONS TO CHOOSE FROM"
  290PRINTTAB(10)"THESE ARE  :"
  300PRINTTAB(12)"1. ISSUE AN ITEM FROM STOCK."
  310PRINTTAB(12)"2. RECIEVE A DELIVERY OF AN ITEM OF STOCK."
  320PRINTTAB(12)"3. EXIT FROM PROGRAM."
  330PRINTTAB(3)"ENTER THE NUMBER OF YOUR CHOICE."
  340INPUT "YOUR CHOICE IS NUMBER";CHOICE
  350ON CHOICE GOSUB 430,380,480
  360GOSUB 140
  370GOTO 280
  380REM ADDING TO STOCK
  390INPUT "ENTER THE PART NUMBER OF THE ITEM RECIEVED";PARNO
  400INPUT "ENTER THE QUANTITY RECIEVED";QUANTIN
  410STOCK(PARNO,2) = STOCK(PARNO,2) + QUANTIN
  420RETURN
  430REM WITHDRAWALS FROM STOCK
  440INPUT "ENTER THE PART NUMBER OF THE ITEM WITHDRAWN";PARNO
  450INPUT "ENTER THE QUANTITY WITHDRAWN";QUANTOUT
  460STOCK(PARNO,2) = STOCK(PARNO,2) - QUANTOUT
  470RETURN
  480REM EXIT ROUTINE
  490PRINT:PRINT
  500PRINT"CURRENT STOCK SITUATION."
  510GOSUB 140
  520END
>
>
>
```

PROGRAM WAGES

```
>>LIST
    7 REM***MODULE B***
    8 CLS
   10 PRINT "WAGES":PRINT
   20 PRINT "TYPE IN NAME"
   30 INPUT N$
   40 PRINT "TYPE IN CLOCK NUMBER"
   50 INPUT CN
   60 PRINT "TYPE IN TAX CODE NUMBER"
   70 INPUT TC
   80 PRINT "TYPE IN GROSS PAY"
   90 INPUT GP
  100 LET TFP=TC*10/52
  110 LET TP=GP-TFP
  120 LET T=TP*30/100
  130 LET NI=GP*7.75/100
  140 LET D=T+NI
  150 LET NP=GP-D
  160 PRINT "NET PAY IS"NP
  170 END
```

PROGRAM WORDY

```
 10 VDU14
 20 *FX144,255
 30 MODE0
 40 VDU19,0,7,0,0,0:VDU19,1,0,0,0,0
 50 PRINTTAB(20,10);"WORDPROCESSOR"
 60 HIMEM=9728
 70 W=12287
 80 FORX=HIMEM TO W
 90 ?X=&20
100 NEXT X
110 X=HIMEM
120 CLS
130PRINTTAB(15,0)"Wordprocessor-top line is mode select";
140 A$=INKEY$(500)
150 PROCopt
160 GOTO 150
170 END
180 DEFPROCopt
190 LOCAL A$,A
200 ON ERROR GOTO 210
210 VDU30:PRINTSPC(78)
220 VDU30
230 PRINTTAB(15,0)"1=WRITE,2=SAVE,3=LOAD,4=PRINT";
240 A$=GET$
250 A=EVAL A$
260 IF A>4ORA<1GOTO210
270 ON A GOTO280,290,300,310
280 PROCwrite:GOTO 210
290 PROCsave:GOTO 210
300 PROCload:GOTO 210
310 PROCprint:GOTO 210
320 ENDPROC
330 DEFPROCwrite
340 VDU30:PRINTSPC(78)
350 VDU30:PRINT" £ for insertion routine.    ¦ for close up routine."
360 *FX4,1
370 PROCget
380IF A=&7F THEN X=X-1
390 IF A=&0D THEN VDU31,0,(VPOS+1):GOTO 440
400 IF A=&7F GOTO 440
410 IF A=124 PROCclose:GOTO 460
420 IF A=35 PROCinsert:GOTO 460
430 PRINTCHR$(A);:?X=A
440 IF POS=79 AND VPOS=30 GOTO 460
450 GOTO 370
460 ENDPROC
470 DEFPROCprint
480 LOCAL A,X,Y
490 VDU30
500 PRINT SPC(78);
```

```
 510 VDU30:W=12207
 520 PRINTTAB(15,0)"PRINTING!"
 530 VDU2,1,&12,1,&0D
 540 FORX=HIMEM TO W
 550 Y=?X
 560 VDU1,Y
 570 NEXTX
 580 VDU3
 590 ENDPROC
 600 DEFPROCinsert
 610 LOCAL A,T
 620 VDU30:PRINT"INSERTION-move cursor to insertion point, then press space
"
 630 PROCget
 640 IF A<>&20 GOTO 630
 650 VDU30:PRINTSPC(78);:VDU30
 660 PRINT"Now enter the phrase for insertion (END WITH £). PRESS ANY KEY.";
 670 A$=INKEY$(10000)
 680 VDU30
 690 PRINTSPC(78)
 700 VDU30
 710 A$=""
 720 A=GET
 730 PRINT CHR$(A);
 740 IF A=35 OR POS=79 GOTO 770
 750 A$=A$+CHR$(A)
 760 GOTO 720
 770 VDU30,10
 780 FOR T=W TO X STEP -1
 790 ?(T+LENA$)=?T
 800 NEXTT
 810 FOR T=1TO(LENA$)
 820 ?(X-1+T)=ASC(MID$(A$,T,1))
 830 NEXTT
 840 FOR T=HIMEM TO W-1
 850 PRINT CHR$(?T);
 860 NEXTT
 870 ENDPROC
 880 DEFPROCsave
 890 VDU30:PRINTSPC(78):VDU30
 900 PRINT" PRESS RECORD THEN RETURN."
 910 VDU28,0,0,0,0
 920 *SAVE"TEXT"2650 2FFF 2650
 930 VDU26
 940 ENDPROC
 950 DEFPROCload
 960 LOCAL Z
 970 VDU30:PRINTSPC(78):VDU30
 980 PRINT" PRESS PLAY."
 990 VDU28,0,0,0,0
1000 *LOAD"TEXT"
```

```
 1010 VDU26
 1020 VDU31,0,1
 1030 FORZ=HIMEM TO W
 1040 IF?Z=127 THEN?Z=32
 1050 PRINTCHR$(?Z);
 1060 IF POS=79 AND VPOS=30 GOTO 1080
 1070 NEXT Z
 1080 ENDPROC
 1090 DEFPROCclose
 1100 LOCAL A,Z
 1110 VDU30:PRINT"Position the cursor at the end of the area you are closing.
EN PRESS SPACE."
 1120 PROCget
 1130 IF A<>&20 GOTO 1120
 1140 VDU30:PRINTSPC(78)
 1150 VDU30:INPUT"How many spaces do you wish to close",A
 1160 FOR Z=X TO W
 1170 ?(Z-A)=?Z
 1180 NEXTZ
 1190 VDU30,10
 1200 FOR Z=HIMEM TO W
 1210 IF POS=79 AND VPOS=30 GOTO 1230
 1220 PRINTCHR$(?Z);
 1230 NEXTZ
 1240 ENDPROC
 1250 DEFPROCget
 1260 A=GET
 1270 X=POS+(VPOS-1)*80+HIMEM
 1280 IF A=136 VDU31,(POS-1),VPOS:GOTO 1260
 1290 IF A=137 VDU31,(POS+1),VPOS:GOTO 1260
 1300 IF A=138 VDU31,POS,(VPOS+1):GOTO 1260
 1310 IF A=139 VDU31,POS,(VPOS-1):GOTO 1260
 1320 ENDPROC
```

PROGRAM VTEST1-4

```
 10 REM ************************
 20 REM *** V-TEST PROGRAMS  ***
 30 REM *** By Stephen Lewis ***
 40 REM *** Glos.C.A.T.      ***
 45 REM *** Number 1,2,3 & 4 ***
 50 REM ************************
 60:
 70REM ** If ERROR is detected start again at beginning **
 80ONERRORRUN
 90MODE7
100REM ** Initialise variables etc. **
110PROCINIT
120REM ** Display options available **
130PROCMENU
140REM ** Clear screen and restore cursor controls before ending **
150IF Number%<5 THEN 180
160*FX4,0
170CLS:END
180REM ** Set pointer for data depending on choice **
190REM ** Do NOT renumber this program with the data written in **
200REM ** as a function is used to select data for each test **
210RESTORE Number%*1000+1000
220REM ** Reset value of score in last test **
230Score%=0
240REM ** Read number of questions in test **
250READ F%:FOR J%=1 TO F%
260PROCTEST
270NEXT
280PROCRESULT
290PROCAGAIN
300IF Again$="Y" THEN 210 ELSE 110
310END
320:
330DEF PROCTEST
340PROCHEADING
350PRINTTAB(5,4)Y$;"Question ";J%
360PRINT
370REM ** Read number of answers **
380READ X%:FOR L%=1 TO X%
390REM ** Read number of lines in each answer **
400READ N%
410REM ** Read line and print it **
420FOR K%=1 TO N%
430READ A$:PRINTC$;A$
440NEXT:PRINT:NEXT:READ A:PRINT
450REM ** Accept answer **
460PRINTTAB(10)C$;"Answer is ?";:A%=VAL(FNinput(POS,VPOS,"N",X%))
470REM ** Compare guess to actual answer **
480IF A%=A THEN PROCRIGHT ELSE PROCWRONG
490ENDPROC
500:
510DEF PROCRIGHT
520REM ** Set up text window **
530VDU28,0,24,39,22
540CLS:PRINTD$;C$;TAB(10)"Correct , well done"
550PRINTD$;C$;TAB(10)"Correct , well done"
560REM ** Wait 1 sec for spacebar to be pressed **
570IF INKEY$(100)=" " THEN 640
580CLS
590PRINTD$;C$;TAB(6)"Press Space Bar To Continue"
600PRINTD$;C$;TAB(6)"Press Space Bar To Continue"
```

```
 610REM ** Wait 1 sec for spacebar to be pressed **
 620IF INKEY$(100)<>" " THEN 540
 630REM ** Re-set text window **
 640VDU26
 650REM ** Add one to score **
 660Score%=Score%+1
 670ENDPROC
 680:
 690DEF PROCWRONG
 700REM ** Set up text window **
 710VDU28,0,24,39,22
 720CLS:PRINTR$;D$:TAB(5)"Wrong . The right answer was ";A
 730PRINTR$;D$;TAB(5)"Wrong . The right answer was ";A
 740REM ** Wait 1 sec for spacebar to be pressed **
 750IF INKEY$(100)=" " THEN 810
 760CLS:PRINTR$;D$;TAB(6)"Press Space Bar To Continue      "
 770PRINTR$;D$;TAB(6)"Press Space Bar To Continue      "
 780REM ** Wait 1 sec for spacebar to be pressed **
 790IF INKEY$(100)<>" " THEN 720
 800REM ** Restore text window to normal **
 810VDU26
 820ENDPROC
 830:
 840DEF PROCHEADING
 850CLS
 860PRINT B$;Z$;Y$;D$;TAB(6)"Vocabulary Testing Program ";Number$
 870PRINT B$;Z$;Y$;D$;TAB(6)"Vocabulary Testing Program ";Number$
 880ENDPROC
 890:
 900DEF PROCINIT
 910REM ** Disable cursor control keys **
 920*FX4,1
 930REM ** Mode 7 control code abbreviations **
 940R$=CHR$129:G$=CHR$130
 950Y$=CHR$131:B$=CHR$132
 960M$=CHR$133:C$=CHR$134
 970D$=CHR$141:Z$=CHR$157
 980F$=CHR$136:O$=CHR$156
 990Number$=CHR$8+"s"
1000ENDPROC
1010:
1020DEF PROCRESULT
1030PROCHEADING
1040PRINTTAB(9,7)B$;Z$;Y$;D$;"R e s u l t s   ";O$
1050PRINTTAB(9,8)B$;Z$;Y$;D$;"R e s u l t s   ";O$
1060PRINTTAB(0,13);
1070REM ** Convert score into a number from 0 to 5 **
1080IF F%=10 THEN N=INT(Score%/2) ELSE N=Score%
1090REM ** Depending on the score print a suitable message **
1100 FOR J=1 TO 2
1110ON N+1 GOTO 1170,1160,1150,1140,1130,1120
1120PRINTD$;C$;TAB(6)"Excellent.what a genius !!":NEXT:GOTO 1190
1130PRINTD$;Y$;TAB(3)"Very good,almost genius level !":NEXT:GOTO 1190
1140PRINTD$;B$;TAB(3)"Quite good,but not a genius yet !":NEXT:GOTO 1190
1150PRINTD$;G$;TAB(3)"Not bad,but room for improvement":NEXT:GOTO 1190
1160PRINTD$;M$;TAB(4)"You can do better than that !":NEXT:GOTO 1190
1170PRINTD$;R$;TAB(2)"I think you should ask for some help":NEXT
1180REM ** Print score **
```

```
1190FORJ=17TO18:PRINTTAB(5,J)D$;C$;"You scored ";Score%;" out of ";F%:NEXT
1200PRINTTAB(5,23)C$;"Press SPACE BAR to continue";:REPEAT UNTIL GET$=" "
1210ENDPROC
1220:
1230DEF PROCAGAIN
1240PROCHEADING
1250 PRINTTAB(9,10)C$;D$;"Would You Like To "
1260 PRINTTAB(9,11)C$;D$;"Would You Like To "
1270 PRINTTAB(7,13)C$;D$;"Try That Test Again ?"
1280 PRINTTAB(7,14)C$;D$;"Try That Test Again ?"
1290 PRINTTAB(11,17)C$;"Answer Y or N :";
1300Again$=FNinput(POS,VPOS,"YN",0)
1310ENDPROC
1320:
1330DEF PROCMENU
1340PROCHEADING
1350REM ** Give list of options **
1360PRINTTAB(0,5)C$;"Which would you like ?"
1370PRINTTAB(10,8)C$;"1) V-TEST1"
1380PRINTTAB(10,11)C$;"2) V-TEST2"
1390PRINTTAB(10,14)C$;"3) V-TEST3"
1400PRINTTAB(10,17)C$;"4) V-TEST4"
1410PRINTTAB(10,20)C$;"5) Quit Programs"
1420PRINTTAB(15,23)C$;"Answer 1-5: ";
1430 Number$=FNinput(POS,VPOS,"N",6)
1440Number%=VAL(Number$)
1450ENDPROC
1460:
1470DEF FNinput(Xpos%,Ypos%,Type$,Max%)
1480REM ** Xpos%,Ypos% are co-ordinates of cursor **
1490REM ** Type$ is whether a number or letter     **
1500REM ** Max% is upper limit on number entered  **
1510PRINTTAB(Xpos%,Ypos%)"  ";:PRINTTAB(Xpos%,Ypos%);
1520REM ** Wait for reply and convert to ASCII code **
1530 Answer$=GET$:Answer%=ASC(Answer$)
1540REM ** If expected reply is number do PROCnumber **
1550REM ** If expected reply is Y or N do PROCyn      **
1560IF Type$="N" THEN PROCnumber ELSE PROCyn
1570IF check%=1 THEN PRINT Answer$; ELSE PROCbleep:GOTO 1510
1580REM ** Wait for RETURN to be pressed **
1590Next$=GET$:IF ASC(Next$)=13 THEN =CHR$(Answer%) ELSE IF ASC(Next$)=127 G
OTO 1510 ELSE PROCbleep:GOTO 1590
1600:
1610DEF PROCbleep
1620REM ** Short bleep **
1630SOUND 3,-15,200,2
1640ENDPROC
1650:
1660DEF PROCyn
1670REM ** Check if answer was Y or N **
1680IF Answer%=89 OR Answer%=78 THEN check%=1 ELSE check%=0
1690ENDPROC
1700:
1710DEF PROCnumber
1720REM ** Check if answer was between limits **
1730IF Answer%>48 AND Answer%<48+Max% THEN check%=1 ELSE check%=0
1740ENDPROC
```

```
 2000REM ****** DATA FOR TESTS ******
 2010:
 2015REM **** DATA FOR FIRST QUIZ **
 2020DATA 5: REM ** No of questions **
 2030DATA 5
 2040DATA 1,A computer is :
 2050DATA 1,1. A pocket calculator
 2060DATA 3,2. An electronic machine which follows,"   a set of instructions
to process","   data"
 2070DATA 1,3. A robot
 2080DATA 2,4. A person who writes instructions,"   for a machine to follow"
 2090 DATA 2
 2100DATA 5
 2110DATA 1,Hardware is :
 2120DATA 1,1. Any computer parts or equipment
 2130DATA 1,2. The tools used to build computers
 2140DATA 2,3. Very small computers which can,"   be built on chips of silico
n"
 2150DATA 2,4. Instructions to be followed by,"   a computer"
 2160DATA 1
 2170DATA 5
 2180DATA 1,A computer program is :
 2190DATA 1,1. Anything on TV about computers
 2200DATA 2,2. A set of special computer cards,"   which have holes punched i
n them"
 2210DATA 2,3. A timetable showing what work is,"   to be done using a comput
er"
 2220DATA 2,4. A set of instructions which a,"   computer can follow"
 2230DATA 4
 2240DATA 5
 2250DATA 1,Software is :
 2260DATA 1,1. People who work with computers
 2270DATA 2,2. The programs which are used,"   with a computer"
 2280DATA 1,"3. Wires , cables and electricity"
 2290DATA 2,4. Ways in which computers can,"   store information"
 2300DATA 2
 2310DATA 5
 2320DATA 1,A microprocessor is :
 2330DATA 2,1. A desk-top sized computer such,"   as the BBC computer"
 2340DATA 1,2. A type of watch that has no hands
 2350DATA 2,3. A machine that makes things look,"   bigger "
 2360DATA 2,4. A tiny computer processor usually,"   built on a chip of silic
on"
 2370DATA 4
 2380:
```

```
 3000REM **** DATA FOR SECOND TEST **
 3010:
 3020DATA5
 3030DATA 4
 3040DATA 2,"The smallest kind of computers,which","can sit on desk tops are
called:"
 3050DATA 1,1. Minicomputers
 3060DATA 1,2. Microcomputers
 3070DATA 1,3. Mainframe computers
 3080DATA 2
 3090DATA 4
 3100DATA 3,"Medium sized computers,which can","deal with most things except
high","volumes of data,are called :"
 3110DATA 1,1. Minicomputers
 3120DATA 1,2. Microcomputers
 3130DATA 1,3. Mainframe computers
 3140DATA 1
 3150DATA 4
 3160DATA 3,"The largest computers,which can handle","huge volumes of data at
 very fast","speed,are called:"
 3170DATA 1,1. Minicomputers
 3180DATA 1,2. Microcomputers
 3190DATA 1,3. Mainframe computers
 3200DATA 3
 3210DATA 5
 3220DATA 1,The Central Processing Unit (CPU) is:
 3230DATA 2,1. A kind of keyboard which is used,"   for typing data into the
computer"
 3240DATA 2,"2. The 'Brain' of the computer,where","   the work is done"
 3250DATA 1,3. An electrical junction box
 3260DATA 2,4. A screen which displays messages,"   put out by the computer"
 3270DATA 2
 3280DATA 5
 3290DATA 1,A computer peripheral is:
 3300DATA 2,1. Any piece of computer equipment,"   linked to the CPU"
 3310DATA 2,2. A machine which reads the messages,"   on punched cards"
 3320DATA 1,3. A man who writes computer programs
 3330DATA 2,4. An electrical lead to connect one,"   piece of equipment to an
other"
 3340DATA 1
 3350:
```

```
 4000REM **** DATA FOR THIRD TEST ***
 4010:
 4020DATA 5
 4030DATA 7
 4040DATA3,Which instruction would you use to,copy a program called MEET into
 the,computer memory ?
 4050DATA 1,1. RUN MEET
 4060DATA 1,2. LOAD MEET
 4070DATA 1,3. RUN 'MEET'
 4080DATA 1,4. LOAD "MEET"
 4090DATA 1,5. RUN "MEET"
 4100DATA 1,6. LOAD 'MEET'
 4110DATA 4
 4120DATA 7
 4130DATA 2,Which of these instructions would,start the program working ?
 4140DATA1,1. GO
 4150DATA 1,2. RUN MEET
 4160DATA 1,3. RUN 'MEET'
 4170DATA 1,4. LOAD
 4180DATA 1,5. RUN
 4190DATA 1,6. RUN "MEET"
 4200DATA 5
 4210DATA 5
 4220DATA 3,When typing in an instruction at a,"computer keyboard,which key s
hould",you remember to press at the end ?
 4230DATA 1,1. DELETE
 4240DATA 1,2. REPEAT
 4250DATA 1,3. ESCAPE
 4260DATA 1,4. RETURN
 4270DATA 4
 4280DATA 5
 4290 DATA 3,What instruction would you use to,wipe off a program held in the
,computer memory ?
 4300DATA 1,1. NEW
 4310DATA 1,2. DELETE
 4320DATA 1,3. WIPE
 4330DATA 1,4. CLEAR
 4340DATA 1
 4350DATA 5
 4360DATA 3,What is the correct name for the,small flashing bar that shows yo
u,where you are on the screen ?
 4370DATA 1,1. A hyphen
 4380DATA 1,2. RETURN
 4390DATA 1,3. The cursor
 4400DATA 1,4. A microdot
 4410DATA 3
 4420:
```

```
 5000REM *** DATA FOR FOURTH TEST ***
 5010:
 5020DATA10
 5030DATA 5
 5040DATA 1,A programming language is :
 5050DATA 1,1. Mathematical symbols
 5060DATA 1,2. French
 5070DATA 2,3. An expensive type of computer,"   which can talk and listen"
 5080DATA 2,4. A set of rules and vocabulary,"   for writing computer instruc
tions"
 5090DATA 4
 5100DATA 5
 5110DATA 1,BASIC is :
 5120DATA 1,1. A type of microcomputer
 5130DATA 1,2. A computer course for beginners
 5140DATA 1,3. A programming language
 5150DATA 2,4. How the different parts of ,"   a computer are linked together
"
 5160DATA 3
 5170DATA5
 5180DATA2,What should each line of a program,begin with ?
 5190DATA 1,1. RUN
 5200DATA 1,2. A program instruction
 5210DATA 1,3. RETURN
 5220DATA 1,4. A line number
 5230DATA 4
 5240DATA 7
 5250DATA 3,Which BASIC instruction would you use,if you wanted your program
to take in,information from the keyboard ?
 5260DATA 1,1. LET
 5270DATA 1,2. PRINT
 5280DATA 1,3. INPUT
 5290DATA 1,4. GOTO
 5300DATA 1,5. IF
 5310DATA 1,6. THEN
 5320DATA 3
 5330DATA 7
 5340DATA 2,Which one allows you to perform,calculations on your data ?
 5350DATA 1,1. LET
 5360DATA 1,2. PRINT
 5370DATA 1,3. INPUT
 5380DATA 1,4. GOTO
 5390DATA 1,5. IF
 5400DATA 1,6. THEN
 5410DATA1
 5420DATA 7
 5430DATA 3,Which one lets you test your data and,take different actions acco
rding to,the results of the test ?
 5440DATA 1,1. LET
 5450DATA 1,2. PRINT
 5460DATA 1,3. INPUT
 5470DATA 1,4. GOTO
 5480DATA 1,5. IF
 5490DATA 1,6. THEN
 5500DATA 5
```

```
5510DATA 7
5520DATA 2,Which one  sends control to a,different part of your program ?
5530DATA 1,1. LET
5540DATA 1,2. PRINT
5550DATA 1,3. INPUT
5560DATA 1,4. GOTO
5570DATA 1,5. IF
5580DATA 1,6. THEN
5590DATA 4
5600DATA 7
5610DATA 1,Which one displays data on a VDU ?
5620DATA 1,1. LET
5630DATA 1,2. PRINT
5640DATA 1,3. INPUT
5650DATA 1,4. GOTO
5660DATA 1,5. IF
5670DATA 1,6. THEN
5680DATA 2
5690 DATA 5
5700DATA 3,What would you type into the,computer to look at a program held,i
n memory ?
5710 DATA 1,1. LIST
5720DATA 1,2. LLIST
5730DATA 1,3. LOAD
5740DATA 1,4. PRINT
5750DATA 1
5760DATA 5
5770 DATA 3,What instruction would store the,program held in memory on backi
ng,storage ?
5780DATA 1,1. STORE
5790DATA 1,2. SAVE
5800DATA 1,3. NEW
5810DATA 1,4. LLIST
5820DATA 2
5830:
```

PROGRAM VTESTS-7

```
 10 REM ************************
 20 REM *** V-TEST PROGRAMS   ***
 30 REM *** By Stephen Lewis ***
 40 REM *** Glos.C.A.T.      ***
 45 REM *** Number 5,6,and 7 ***
 50 REM ************************
 60:
 70REM ** If ERROR is detected start again at beginning **
 80ON ERROR GOTO 100
 90MODE7
100REM ** Initialise variables etc. **
110PROCINIT
120REM ** Display options available **
130PROCMENU
140REM ** Clear screen and restore cursor controls before ending **
150IF Number%<4 THEN 180
160*FX4,0
170CLS:END
180REM ** Set pointer for data depending on choice **
190REM ** Do NOT renumber this program with the data written in **
200REM ** as a function is used to select data for each test **
210RESTORE Number%*1000+1000
220REM ** Reset value of score in last test **
230Score%=0
240REM ** Read number of questions in test **
250READ F%:FOR J%=1 TO F%
260PROCTEST
270NEXT
280PROCRESULT
290PROCAGAIN
300IF Again$="Y" THEN 210 ELSE 110
310END
320:
330DEF PROCTEST
340PROCHEADING
350PRINTTAB(5,4)Y$;"Question ";J%
360PRINT
370REM ** Read number of answers **
380READ X%:FOR L%=1 TO X%
390REM ** Read number of lines in each answer **
400READ N%
410REM ** Read line and print it **
420FOR K%=1 TO N%
430READ A$:PRINTC$;A$
440NEXT:PRINT:NEXT:READ A:PRINT
450REM ** Accept answer **
460PRINTTAB(10)C$;"Answer is ?";:A%=VAL(FNinput(POS,VPOS,"N",X%))
470REM ** Compare guess to actual answer **
480IF A%=A THEN PROCRIGHT ELSE PROCWRONG
490ENDPROC
500:
510DEF PROCRIGHT
520REM ** Set up text window **
530VDU28,0,24,39,22
540CLS:PRINTD$;C$;TAB(10)"Correct , well done"
550PRINTD$;C$;TAB(10)"Correct , well done"
560REM ** Wait 1 sec for spacebar to be pressed **
570IF INKEY$(100)=" " THEN 640
580CLS
590PRINTD$;C$;TAB(6)"Press Space Bar To Continue"
600PRINTD$;C$;TAB(6)"Press Space Bar To Continue"
```

```
 600PRINTD$;C$;TAB(6)"Press Space Bar To Continue"
 610REM ** Wait 1 sec for spacebar to be pressed **
 620IF INKEY$(100)<>" " THEN 540
 630REM ** Re-set text window **
 640VDU26
 650REM ** Add one to score **
 660Score%=Score%+1
 670ENDPROC
 680:
 690DEF PROCWRONG
 700REM ** Set up text window **
 710VDU28,0,24,39,22
 720CLS:PRINTR$;D$;TAB(5)"Wrong . The right answer was ";A
 730PRINTR$;D$;TAB(5)"Wrong . The right answer was ";A
 740REM ** Wait 1 sec for spacebar to be pressed **
 750IF INKEY$(100)=" " THEN 810
 760CLS:PRINTR$;D$;TAB(6)"Press Space Bar To Continue      "
 770PRINTR$;D$;TAB(6)"Press Space Bar To Continue      "
 780REM ** Wait 1 sec for spacebar to be pressed **
 790IF INKEY$(100)<>" " THEN 720
 800REM ** Restore text window to normal **
 810VDU26
 820ENDPROC
 830:
 840DEF PROCHEADING
 850CLS
 860PRINT B$;Z$;Y$;D$;TAB(6)"Vocabulary Testing Program ";Number$
 870PRINT B$;Z$;Y$;D$;TAB(6)"Vocabulary Testing Program ";Number$
 880ENDPROC
 890:
 900DEF PROCINIT
 910REM ** Disable cursor control keys **
 920*FX4,1
 930REM ** Mode 7 control code abbreviations **
 940R$=CHR$129:G$=CHR$130
 950Y$=CHR$131:B$=CHR$132
 960M$=CHR$133:C$=CHR$134
 970D$=CHR$141:Z$=CHR$157
 980F$=CHR$136:O$=CHR$156
 990Number$=CHR$8+"s"
1000ENDPROC
1010:
1020DEF PROCRESULT
1030PROCHEADING
1040PRINTTAB(9,7)B$;Z$;Y$;D$;"R e s u l t s   ";O$
1050PRINTTAB(9,8)B$;Z$;Y$;D$;"R e s u l t s   ";O$
1060PRINTTAB(0,13);
1070REM ** Depending on the score print a suitable message **
1080 FOR J=1 TO 2
1090ON Score%+1 GOTO 1150,1150,1140,1130,1120,1110,1100,1100
1100PRINTD$;C$;TAB(6)"Excellent,what a genius !!":NEXT:GOTO 1170
1110PRINTD$;Y$;TAB(3)"Very good,almost genius level !":NEXT:GOTO 1170
1120PRINTD$;B$;TAB(3)"Quite good,but not a genius yet !":NEXT:GOTO 1170
1130PRINTD$;G$;TAB(3)"Not bad,but room for improvement":NEXT:GOTO 1170
1140PRINTD$;M$;TAB(4)"You can do better than that !":NEXT:GOTO 1170
1150PRINTD$;R$;TAB(2)"I think you should ask for some help":NEXT
1160REM ** Print score **
1170FORJ=17TO18:PRINTTAB(5,J)D$;C$;"You scored ";Score%;" out of ";F%:NEXT
1180PRINTTAB(5,23)C$;"Press SPACE BAR to continue";:REPEAT UNTIL GET$=" "
1190ENDPROC
1200:
 1210DEF PROCAGAIN
 1220PROCHEADING
 1230 PRINTTAB(9,10)C$;D$;"Would You Like To "
 1240 PRINTTAB(9,11)C$;D$;"Would You Like To "
 1250 PRINTTAB(7,13)C$;D$;"Try That Test Again ?"
 1260 PRINTTAB(7,14)C$;D$;"Try That Test Again ?"
 1270 PRINTTAB(11,17)C$;"Answer Y or N :";
 1280Again$=FNinput(POS,VPOS,"YN",0)
 1290ENDPROC
 1300:
 1310DEF PROCMENU
 1320PROCHEADING
 1330REM ** Give list of options **
 1340PRINTTAB(0,5)C$;"Which would you like ?"
 1350PRINTTAB(10,8)C$;"1) V-TEST5"
 1360PRINTTAB(10,11)C$;"2) V-TEST6"
 1370PRINTTAB(10,14)C$;"3) V-TEST7"
 1380PRINTTAB(10,17)C$;"4) Quit Programs"
 1390PRINTTAB(15,20)C$;"Answer 1-4: ";
 1400Number%=VAL(FNinput(POS,VPOS,"N",5))
 1410Number$=STR$(Number%+4)
 1420ENDPROC
 1430:
 1440DEF FNinput(Xpos%,Ypos%,Type$,Max%)
 1450REM ** Xpos%,Ypos% are co-ordinates of cursor **
 1460REM ** Type$ is whether a number or letter     **
 1470REM ** Max% is upper limit on number entered  **
 1480PRINTTAB(Xpos%,Ypos%)"  ";:PRINTTAB(Xpos%,Ypos%);
 1490REM ** Wait for reply and convert to ASCII code **
 1500 Answer$=GET$:Answer%=ASC(Answer$)
 1510REM ** If expected reply is number do PROCnumber **
 1520REM ** If expected reply is Y or N do PROCyn     **
 1530IF Type$="N" THEN PROCnumber ELSE PROCyn
 1540IF check%=1 THEN PRINT Answer$; ELSE PROCbleep:GOTO 1480
 1550REM ** Wait for RETURN to be pressed **
 1560Next$=GET$:IF ASC(Next$)=13 THEN =CHR$(Answer%) ELSE IF ASC(Next$)=127 G
OTO 1480 ELSE PROCbleep:GOTO 1560
 1570:
 1580DEF PROCbleep
 1590REM ** Short bleep **
 1600SOUND 3,-15,200,2
 1610ENDPROC
 1620:
 1630DEF PROCyn
 1640REM ** Check if answer was Y or N **
 1650IF Answer%=89 OR Answer%=78 THEN check%=1 ELSE check%=0
 1660ENDPROC
 1670:
 1680DEF PROCnumber
 1690REM ** Check if answer was between limits **
 1700IF Answer%>48 AND Answer%<48+Max% THEN check%=1 ELSE check%=0
 1710ENDPROC
```

```
2000REM ** DATA FOR TESTS ***
2010:
2020REM ** Data for first test **
2030DATA 6:REM ** No of questions **
2040DATA 5
2050DATA 1,A computer application is :
2060DATA 1,1. Any piece of computer equipment
2070DATA 1,2. A practical use for a computer
2080DATA 3,3. A special form which people wishing,"   to work with computers
have to fill","   in"
2090DATA 2,4. A computer which can only do one,"   type of job"
2100DATA 2
2110DATA 5
2120DATA 1,In the computer world D.P. stands for :
2130DATA 1,1. Distributed programming
2140DATA 1,2. Data processing
2150DATA 1,3. Digital processor
2160DATA 1,4. Direct production
2170DATA 2
2180DATA 5
2190DATA 1,In the computer world I.T. stands for :
2200DATA 1,1. Integrated testing
2210DATA 1,2. Instructional technician
2220DATA 1,3. Input task
2230DATA 1,4. Information technology
2240 DATA 4
2250DATA 5
2260DATA 1,A Word Processor is :
2270DATA 3,1. A computer with programs which,"   are specially designed for"
,"   handling text"
2280DATA 1,2. A mechanical secretary
2290DATA 2,3. The part of a computer which,"   processes the data"
2300DATA 1,4. A system for sending electronic mail
2310DATA 1
2320DATA 5
2330DATA 1,A computer database is
2340DATA 2,1. A place where computer equipment is,"   stored"
2350DATA 2,2. A central collection of information,"   held by a computer"
2360DATA 1,3. A backing storage device
2370DATA 2,4. The head office of any company that,"   makes use of a compute
r system"
2380DATA 2
2390DATA 5
2400DATA 1,A software package is :
2410DATA 2,1. A metal container for any computer,"   hardware"
2420DATA 1,2. A programming language
2430DATA 2,3. The container for either a floppy,"   disc or a cassette"
2440DATA 2,4. Standard ready-written software,"   that you can buy"
2450DATA 4
```

```
 3000REM ** Data for second test **
 3010REM
 3020DATA 6 :REM ** No of questions **
 3030DATA 5
 3040DATA 1,Data preparation is :
 3050DATA 2,1. Converting data into a form that a,"   computer can understand
"
 3060DATA 1,2. Punched cards
 3070DATA 2,3. Processing data in a computer's,"   memory"
 3080DATA 1,4. Designing a computer system
 3090DATA 1
 3100DATA 5
 3110DATA 1,Data validation is:
 3120DATA 2,1. Processing data in a computer's,"   memory"
 3130DATA 1,2. Punched cards
 3140DATA 2,3. Programming a computer to display,"   information on the VDU s
creen"
 3150DATA 1,4. Checking data for errors
 3160DATA 4
 3170DATA 5
 3180DATA 1,Batch processing is :
 3190DATA 2,1. A system which allows several,"   people to use the computer a
t once"
 3200DATA 2,2. Running data through the computer a,"   batch at a time."
 3210DATA 2,3. A group of programmers working on,"   similar programs"
 3220DATA 2,4. A type of backing storage which can,"   hold a lot of data"
 3230DATA 2
 3240DATA 5
 3250DATA 1,On-line processing is:
 3260DATA 2,1. Sending data to and from a computer,"   down a communications
line"
 3270DATA 1,2. Computing in schools
 3280DATA 2,3. Using a computer as part of a,"   production line on the facto
ry floor"
 3290DATA 2,4. British Rail's computer system for,"   controlling trains"
 3300DATA 1
 3310DATA 5
 3320DATA 1,Real-time procesing is:
 3330DATA 2,1. Computers with a built-in timing,"   device"
 3340DATA 2,2. Several people using the computer,"   at once"
 3350DATA 2,3. Two or more computers processing,"   each other's data"
 3360DATA 3,4. On-line processing where details,"   held on a computer file a
re altered","   there and then"
 3370DATA 4
 3380DATA 5
 3390DATA 1,A time-sharing system is:
 3400DATA 2,1. A computer with a built-in timing,"   device"
 3410DATA 2,2. Operating a computer in eight hour,"   shifts"
 3420DATA 2,3. More than one person using the,"   computer at the same time"
 3430DATA 2,4. A method of paying for the use of,"   a communications line"
 3440DATA 3
 4000DATA 7:REM ** No of questions **
 4010DATA 8
 4020DATA 2,Who designs a computer system to meet,a user's requirements ?
 4030DATA 1,1. The data processing manager
 4040DATA 1,2. The computer programmer
 4050DATA 1,3. The punch operator
 4060DATA 1,4. The systems analyst
 4070DATA 1,5. The computer engineer
 4080DATA 1,6. the data control clerk
 4090DATA 1,7. The computer operator
 4100DATA 4
 4110DATA 8
 4120DATA 1,Who writes software for the system ?
 4130DATA 1,1. The data processing manager
 4140DATA 1,2. The computer programmer
 4150DATA 1,3. The punch operator
 4160DATA 1,4. The systems analyst
 4170DATA 1,5. The computer engineer
 4180DATA 1,6. The data control clerk
 4190DATA 1,7. The computer operator
 4200DATA 2
 4210DATA 8
 4220DATA 2,Who runs this system on the computer,when it is complete ?
 4230DATA 1,1. The data processing manager
 4240DATA 1,2. The computer programmer
 4250DATA 1,3. The punch operator
 4290DATA 1,4. The systems analyst
 4300DATA 1,5. The computer engineer
 4310DATA 1,6. The data control clerk
 4320DATA 1,7. The computer operator
 4330DATA 7
 4340DATA 8
 4350DATA 2,Who will repair the hardware if it,breaks down ?
 4360DATA 1,1. The data processing manager
 4370DATA 1,2. The computer programmer
 4380DATA 1,3. The punch operator
 4390DATA 1,4. The systems analyst
 4400DATA 1,5. The computer engineer
 4410DATA 1,6. The data control clerk
 4420DATA 1,7. The computer operator
 4430DATA 5
 4440DATA 8
 4450DATA 2,Who checks the input and output to the,system to make sure it is
correct ?
 4460DATA 1,1. The data processing manager
 4470DATA 1,2. The computer programmer
 4480DATA 1,3. The punch operator
 4490DATA 1,4. The systems analyst
 4500DATA 1,5. The computer engineer
 4520DATA 1,6. The data control clerk
 4530DATA 1.7. The computer operator
 4540DATA 6
```

```
4550DATA 8
4560DATA 2,Who converts the data on input forms,into holes on cards or paper
tape ?
4570DATA 1,1. The data processing manager
4580DATA 1,2. The computer programmer
4590DATA 1,3. The punch operator
4600DATA 1,4. The systems analyst
4610DATA 1,5. The computer engineer
4620DATA 1,6. The data control clerk
4630DATA 1,7. The computer operator
4640DATA 3
4650DATA 8
4660DATA 2,Who is responsible for the computer,and the staff who run it ?
4670DATA 1,1. The data processing manager
4680DATA 1,2. The computer programmer
4690DATA 1,3. The punch operator
4700DATA 1,4. The systems analyst
4710DATA 1,5. The computer engineer
4720DATA 1,6. The data control clerk
4730DATA 1,7. The computer operator
4740DATA 1
```

APPENDIX B

GLOSSARY OF COMPUTING TERMS

GLOSSARY

(This glossary is intended to give simple, non-technical definitions of the main computer terminology introduced in the core modules. For more detailed technical definitions, and for the more specialised vocabulary introduced in the supplementary modules, the teacher is advised to consult a computer text-book. General business terms, and program instructions, have not been included.)

		Module Introduced in:
ACCESS	Obtaining information from a computer file	G2
APPLICATION	Any use to which a computer is put	A2
BACKING STORAGE	Any form of storage which a computer uses to keep information which is not permanently held in memory. Tape and disc are the most common types.	B1
BAR CODE	A strip containing printed lines of different widths, which contains information which can be read directly into a computer. Commonly used on such things as grocery items and library books	B4
BASIC	The computer language most commonly used on microcomputers	C3
BATCH PROCESSING	A type of computer processing where information is dealt with a batch at a time	D1
CAD	Computer Aided Design	F1
CAL	Computer Aided Learning	G1
CAM	Computer Aided Manufacture	F1
COMPUTER	An electronic machine which processes data	A1
COMPUTER LITERACY	The ability to use computer vocabulary, understand and operate a computer system, recognise the function of computer programs and appreciate a range of uses for computer technology	A1

DATA	Words, numbers, pictures, or other information handled by a computer	B1
DATA BANK	An organised collection of information held on a computer which is available to the public through computer terminals	E2
DATA CONTROL CLERK	A clerk who is responsible for handling computer input and output	H3
DATA COMMUNICATIONS	Transmitting data electronically down a communications line	E2
DATABASE	An organised collection of information held on a computer	D1
DATA PREPARATION	Getting data ready to put into a computer - usually by punching it on cards or paper-tape	D2
DATA PROCESSING	Handling raw data to produce useful information (usually by computer)	B1
ELECTRONIC MAIL	Sending correspondence by electronic means	E2
EXPERT SYSTEM	A computer system which gives professional advice	H1
FLOWCHART	A method of illustrating a logical sequence of events	C2
GRAPHICS	Computer handling of pictures and diagrams	H1
HARDWARE	The physical equipment making up a computer system	B1
INFORMATION TECHNOLOGY (I.T.)	The storage, manipulation and transmission of any form of data, using computers and communications facilities	E2
INPUT	How data gets into a computer system	B1
KEYBOARD	A computer input device with labelled keys; is usually linked with a display screen	A1
LANGUAGE	A structured method of giving a computer instructions	C1
LISTING	A printed computer program	D2
MAGNETIC DISK)	Forms of computer storage	B4
MAGNETIC TAPE)		B1
MAIN FRAME COMPUTER	The largest size of computer; characterised by relatively high cost, storage capacity and processing power	B4

MEMORY	A form of storage immediately available to a computer, in which all processing is done	B1
MICROCHIP/SILICON CHIP	A device containing micro-electronic circuitry on a silicon wafer	B3
MICROCOMPUTER	The smallest size of computer, built round a microprocessor	A1
MICROPROCESSOR	A silicon chip containing a control and processing unit	B3
MINICOMPUTER	The size of computer falling between 'main-frames' and 'micros'	B4
NETWORK	A method of connecting computers together allowing data to be passed between them	H1
ON-LINE	Sending data to and from a computer down a communications line	A2
OUTPUT	How information from a computer system is conveyed to the user	B1
PACKAGE	Standard ready-written software suitable for more than one user	A1
PERIPHERAL	Any device connected to the central processing unit of a computer	B4
PRINTER	A device for producing printed output from a computer system	B1
PROGRAM	A set of instructions telling a computer what to do	A1
PUNCH OPERATOR	Someone who operates a machine for punching data onto cards or paper-tape	H3
REAL-TIME	On-line processing where details held on a computer are altered almost at once	D1
ROBOT	A device which is equipped with sensors and mechanical parts and which is computer-controlled	F1
SENSOR	A device for detecting and registering physical signals	F2
SILICON CHIP	See MICROCHIP	B3
SOFTWARE	The programs of instructions which control the behaviour of a computer	B1
SYSTEMS ANALYST	Someone who specialises in analysing a systems problem and suggesting or designing a solution, which usually involves the use of a computer	H3

TELETEXT	A service which uses the television signal to send requested information to a T.V. screen, eg. ORACLE, CEEFAX	G2
TERMINAL	A peripheral device which is on-line to a computer; most commonly, a keyboard with screen	B4
VDU	Visual Display Unit; a screen and keyboard for entering and receiving data from a computer	A1
VIEWDATA	A data bank service which generally uses telephone lines to send and receive information, eg. PRESTEL	G2
WORD PROCESSOR	A computer with devices and programs specially designed for handling text	E1

APPENDIX C

USEFUL ADDRESSES

Acorn Computers Ltd.,
Fulbourn Road,
Cherry Hinton,
Cambridge,
CB1 4JN

Acornsoft Ltd.,
4A, Market Hill,
Cambridge,
CB2 3NJ

BBC Microcomputer System,
c/o Vector Marketing,
Dennington Estate,
Wellingborough,
Northamptonshire,
NN8 2RL

BBC Software,
Psion Ltd.,
2 Huntsworth Mews,
Gloucester Place,
London
NW1 6DD

Computer Concepts
16 Wayside,
Chipperfield,
Herts.
WD 9JJ

Economatics Ltd.,
Education Division,
4 Orgreave Crescent,
Dore House Industrial Estate,
Handsworth,
Sheffield
S13 9NO

FEU Computer Literacy Project Office
Gloucestershire College of Arts and Technology,
The Christchurch Centre,
Gloucester Road,
Cheltenham. GL51 8PB

Gemini Marketing Ltd.,
18A, Littleham Road,
Exmouth,
Devon.
EX8 1QG.

Powertran Cybernetics,
Portway Industrial Estate,
Andover,
Hants.
SP10 3WN

Research Machines Ltd.,
4 Mill Street,
Oxford.
OX2 0BW

Sinclair Research Ltd.,
Stanhope Road,
Camberley,
Surrey.
GU15 3PS

Torch Computers,
Abberley House,
Great Shelford
Cambridge
CG2 5LQ

FEU Publications

Computer literacy is one of a number of FEU publications intended to inform teachers and others and to stimulate professional discussion about matters of concern to the FE service.

Other FEU publications in the microelectronics field include:

Computer Aided Design in FE: some suggestions on the inclusion of CAD topics in Mechanical Engineering courses. November 1982. (Order No. 9826)

This document, by Peter Ingham of the City of Birmingham Polytechnic, is intended to give guidance to those concerned with the introduction of Computer Aided Design (CAD) into technical curricula. Whilst specially related to mechanical engineering, it should also prove useful to those in other disciplines. The author considers as inevitable the widespread adoption of CAD by British Industry. Further education will, therefore, have an obvious role to play in CAD development, if it is to remain a significant contributor to technological updating.

Towards the electronic office: an overview of the curricular implications of new technology for office and business education and training. September 1983. (Order No. 163)

Commissioned by the FEU from Christine Disney, Computer Consultant, this publication reviews the curriculum implications of new office technology as they have appeared recently. The early sections of the document describe a growing awareness and use of information technology by industry and commerce. The latter sections describe the ways in which the training and education systems are reacting to a rapidly changing situation.

Computer aided profiling: a case study at the North Warwickshire College of Technology and Art, September 1983. (Order No. 164)

A description of how North Warwickshire College approached the computerisation of student profiles for a full-time vocational preparation course. The report outlines the background against which the computerisation idea evolved, the design of the profile, its computerisation, the means by which the idea has begun to be further disseminated throughout the college, the implementation of the profile on one course and the lessons which have been learned as a result. Appendix 1 of the document presents the computer specification.

Copies of these documents (which are free of charge) are obtainable, while stocks last from the Publication Despatch Centre, Department of Education and Science, Honeypot Lane, Canons Park, Stanmore, Middlesex HA7 1AZ.

A complete list of FEU publications is also available from the above address.

The FEU has a number of Research projects (RPs) ongoing in the microelectronic field:

RP 59	Review of Microelectronics in FE.
RP 65	Robotics — a curriculum module for technicians.
RP 80	Computer assisted numeracy profiling.
RP 86	A computerised profiling scheme of numeracy, communications and media studies.
RP 87	Computer-aided profile assessment and curriculum design across a college of FE.
RP 94	Computer appreciation for all full-time and part-time day students.
RP 104	Introduction of computer studies and "hands-on" experience into lower level courses.
RP 106	Word processing curriculum review.
RP 108	Microcomputer use for FE students.
RP 110	A computer based curricular provision for rural communities.
RP 118	Computer literacy for UK shipping management.
RP 119	The implications on FE curricular of the introduction of the robot.
RP 120	Identification of training requirements in computer-aided engineering for smaller firms.
RP 130	Information technology in FE.
RP 151	Computer aided design and manufacture.

Details of these Projects are available from FEU, Room 7/48, Elizabeth House, York Road, London SE1 7PH.